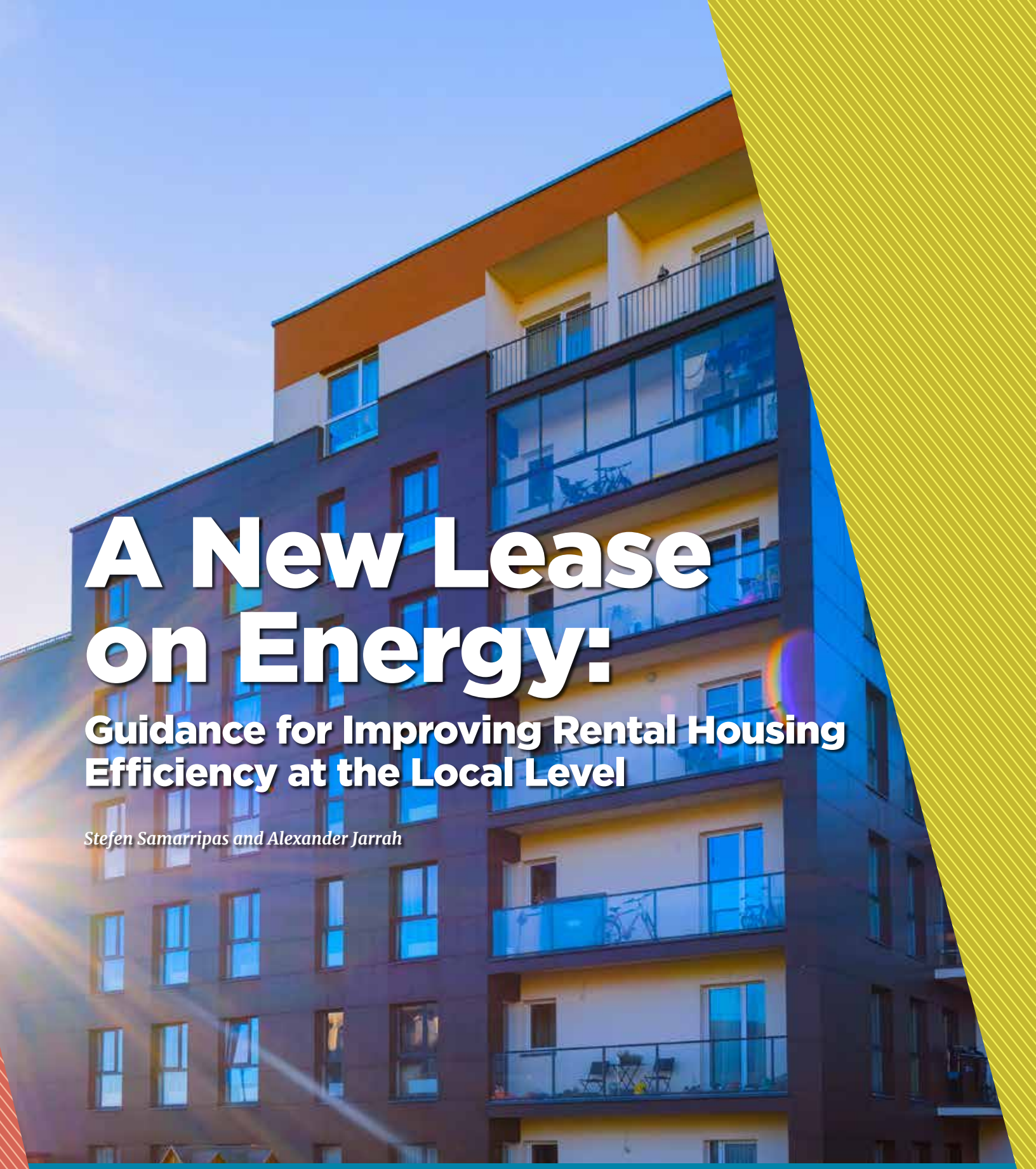

A New Lease on Energy:

Guidance for Improving Rental Housing Efficiency at the Local Level

Stefen Samarripas and Alexander Jarrah

ACEEE
American Council for an Energy-Efficient Economy

USDN | urban sustainability directors network

August 2021 I Report U2102

Contents

ABOUT THE AUTHORS

Stefen Samarripas conducts research, analysis, and outreach on policies and programs that encourage energy efficiency throughout local communities. His work currently focuses on supporting local government-led clean energy initiatives and scaling-up energy efficiency investments in affordable housing. Stefen holds a master of city and regional planning degree from Georgia Tech, where he focused his studies and research on environmental, health, and community development planning. He also earned a bachelor's degree in anthropology from the University of Tennessee at Chattanooga.

Alexander Jarrah is a research assistant on the Local Policy team. He contributes to the *City Scorecard* and community resilience research. Prior to joining ACEEE, he interned at the American Council on Renewable Energy, where he researched corporate sustainability initiatives and resilience planning. He earned a bachelor of science degree in economics and literature from American University.

ACKNOWLEDGMENTS

This report was made possible by the generous support of The JPB and Kresge Foundations and the Urban Sustainability Directors Network (USDN). The authors gratefully acknowledge external reviewers, internal reviewers, colleagues, and sponsors who supported this report. External expert reviewers included Kathryn Wright and Rich Freeh from USDN; Jeremy Hays from Upright Consulting; Elizabeth Vasatka from the City of Boulder; Patrick Hanlon and Isaac Evans from the City of Minneapolis; Larry Kilmer from the City of Milwaukee; Carolyn Conant, Kim DeVoe, Kirk Longstein, Brian Tholl, and John Phelan from Fort Collins Utilities; Christine Andrews from the City of Somerville, Massachusetts; Shubhada Kambli from the City of Hartford; Daniel McCue and Riordan Frost from the Joint Center for Housing Studies of Harvard University; Michael Gartman and Jake Glassman from the Rocky Mountain Institute; Todd Nedwick from the National Housing Trust; and Ben Passer from Fresh Energy. External review and support do not imply affiliation or endorsement. Internal reviewers included Steve Nadel, Lauren Ross, Nora Esram, David Ribeiro, Ariel Drehobl, and Roxana Ayala. The authors also gratefully acknowledge the involvement of USDN's Rental Housing Energy Efficiency Learning Group members. Finally, we would like to thank Mary Robert Carter for managing the editorial process, Mariel Wolfson for developmental editing, Keri Schreiner for copy editing, Kristin Cleveland and Roxanna Usher for proofreading, Tanja Bos for graphic design, and Ben Somberg and Wendy Koch for their help in launching this report.

SUGGESTED CITATION

Samarripas, S., and A. Jarrah. 2021. *A New Lease on Energy: Guidance for Improving Rental Housing Efficiency at the Local Level.* Washington, DC: American Council for an Energy-Efficient Economy. aceee.org/research-report/u2102

Some of the photos used in this report were provided by USDN from their 2019 Annual Meeting.

Executive Summary

KEY FINDINGS

In the pursuit of more equitably improving rental property energy efficiency, we recommend that local governments take the following steps:

1. Use local and national data sources to analyze the rental housing market to better understand renters' housing and energy affordability needs.
2. Conduct community engagement focused on historically marginalized groups—especially low-income renters and renters of color.
3. Determine policy and program options with a consideration for local government goals, capabilities, community relationships, and resources.
4. Formalize and maintain rental efficiency partnerships to effectively implement multiple initiatives affecting housing quality, affordability, and energy use.

BACKGROUND

The American Council for an Energy-Efficient Economy (ACEEE) collaborated with the Urban Sustainability Directors Network (USDN) and Upright Consulting Services, a racial equity, economic inclusion, and sustainability consultancy, to lead a virtual rental housing energy efficiency learning group for local governments from across the country. The group was driven by a recognition that reducing the energy use of rental properties is critical to reducing urban greenhouse gas emissions. The share of U.S. households living in rental homes has grown in recent years, and these properties are 15% less energy efficient on average than owner-occupied homes.[1] The learning group was also driven by a desire to improve rental property efficiency while also furthering race and social equity for low-income renters and renters of color, such as by improving the affordability of both housing and energy.

Using frameworks developed by climate and housing justice advocates, learning group members discussed policies and programs that hold the potential to reduce renters' energy use while preserving or expanding their access to fair, affordable, healthy, and safe housing. This report reflects the conclusions of these discussions, information exchanged between members, and the findings of ACEEE's complementary independent research. The following report has been structured as a guide for local governments, laying out important information, resources, and actions that they can use to equitably improve the efficiency of their rental housing.

ANALYZE THE RENTAL HOUSING MARKET

In developing rental energy efficiency policies, local governments would do well to first use available housing and demographic data to determine the characteristics of their community's rental housing and its occupants. Doing so allows local governments to identify neighborhoods with large shares of renters, the average number of units in a community's rental properties, growth or decline in renter households, and changes in the share of renters' income spent on rent and utility costs.

ENGAGE THE COMMUNITY

Information gathered from a local government's initial rental housing analysis can help refine its approach to public outreach, stakeholder engagement, and community engagement. Interactions between a local government and its residents, businesses, and nonprofit organizations should be structured based on specific outreach goals:

- *Public outreach* is meant primarily to inform and broadly appeal to the public, typically without targeting specific populations.
- *Stakeholder engagement* focuses on engaging with people or organizations that have historically been recognized as having a direct stake in an initiative and its effects.
- *Community engagement* is designed to specifically reach targeted communities such as those that have been historically marginalized from decision making or have experienced disproportionately high burdens and low benefits from previous policies and programs.

While each approach can be valuable in different contexts, community engagement is a necessary preliminary step in crafting policies and programs that fully address the interests and daily lived experiences of groups that have been historically excluded from local decision making. When done equitably, community engagement can strengthen relationships between local governments and their communities and leave localities better equipped to respond to the climate change and energy challenges they face.

[1] EIA (U.S. Energy Information Administration), "2015 RECS Survey Data," 2018 (accessed February 2021).

DETERMINE EQUITABLE RENTAL ENERGY EFFICIENCY POLICY AND PROGRAM OPTIONS

It is unlikely that a single local policy or program will fully address renters' energy efficiency and housing affordability needs, and no single approach will reverse the social inequities that many low-income renters and renters of color face. To address these needs, local governments must consider multiple approaches, including the following:

- Granting renters the right to make efficiency improvements
- Adopting a renter right of first refusal on property sale
- Creating a rental energy disclosure policy
- Advocating to expand state and utility rental efficiency programs
- Promoting existing state and utility efficiency programs to renters and landlords
- Adopting a rental energy performance standard and assisting affordable housing providers with compliance
- Instituting limited-scope rental property retrofit requirements
- Designing rental efficiency loan and grant programs with affordability covenants
- Coupling public housing energy-efficient rehab projects with inclusive workforce development
- Including energy efficiency in competitive affordable housing funding criteria

This list of policy and program options characterizes only some of the approaches that local governments are using, and the options may expand in future years.

FORMALIZE AND MAINTAIN RENTAL EFFICIENCY PARTNERSHIPS TO EFFECTIVELY IMPLEMENT MULTIPLE INITIATIVES: LESSONS FROM LOCAL CASE STUDIES

In this report, we closely examine initiatives by four local governments. In Boulder, Colorado, the SmartRegs policy requires that all of the city's rental properties meet a basic level of energy efficiency, while its EnergySmart program offers landlords technical and financial assistance to make efficiency improvements to their properties. In Fort Collins, Colorado, the Epic Homes program is administered by the city's municipal utility and provides owner- and renter-occupied single-family homes with energy efficiency assessments, no-cost measures, rebates, completion certificates, and on-bill financing. Milwaukee, Wisconsin, offers two rental rehabilitation loan programs that landlords can use to cover the cost of energy efficiency and other property improvements. One program is targeted to specific neighborhoods, while the other is designed to assist with rehabilitation of tax foreclosed properties. In Minneapolis, Minnesota, the 4d Affordable Housing Incentive Program helps owners of affordable rental housing obtain a property tax exemption in exchange for a commitment to keep rents affordable for those with low incomes. The city's Green Cost Share 4d Energy Efficiency program provides 4d Affordable Housing Incentive Program participants with financing to complete energy efficiency upgrades to their properties. Our analysis of these localities' approaches reveals several lessons for local governments:

- Building and maintaining partnerships both within the government and with the local community is critical to improving rental property energy efficiency and preserving affordable housing.
- Creating multiple initiatives may be needed to adequately address the needs of the rental sector.
- Acquiring external funding from philanthropies and other local, state, or federal government sources is helpful in developing rental efficiency programs.
- Forming dedicated energy efficiency funding sources can help to sustain rental efficiency programs over many years.
- Reaching many rental homes and achieving deep energy savings may require substantial spending from one or more programs.
- Achieving high low-income renter participation is more likely for programs specifically designed with this goal in mind.
- Conducting continual community engagement while implementing initiatives may increase landlord participation and better address the many issues that renters face over time.

Introduction

Roughly one-fifth of U.S. greenhouse gas (GHG) emissions can be attributed to home energy use (Goldstein, Gounaridis, and Newell 2020). To achieve the Paris Agreement's target of lowering GHG emissions 28% by 2025 and 80% by 2050, the U.S. residential sector must undergo deep energy efficiency retrofits, be equipped to source low-carbon energy, and have its electricity generation sources decarbonized (Goldstein, Gounaridis, and Newell 2020). Rental housing will need to be an integral part of these strategies, as it is typically less energy efficient than owner-occupied housing. On a per-square-foot basis, existing rental homes consume 15% more energy and have 30% higher energy costs than other homes, with older properties often having the highest energy use and costs (La Jeunesse 2016; EIA 2018). Local governments have additional motivation to improve rental property energy efficiency in that a large share of American households is renting rather than purchasing homes. In 2019, more than 44 million U.S. households (36%) were renters, which is an increase of nearly 8 million households from 2004 (Census Bureau 2021b). People who are 55 or older, have household incomes of at least $45,000, and are non-white were largely responsible for this increase (JCHS 2020).

Throughout 2020 and early 2021, an Urban Sustainability Directors Network (USDN) cohort of local governments met virtually as a rental housing energy efficiency learning group.[2] The group shared and discussed strategies for reducing rental home energy use and costs. In shaping the structure and agenda of these meetings, the group focused on actions and processes that could both reduce energy use and achieve socially equitable outcomes for low- to moderate-income (LMI) renters and renters of color, as both groups have driven recent rental market growth.[3] To guide its discussion of how local government policies and programs can achieve more equitable outcomes for renters and their communities, the USDN group used two climate and housing justice frameworks: The Climate Justice Alliance's Just Transition principles and the AIDS Healthcare Foundation's ***3Ps*** of protecting tenants, preserving communities, and producing housing.[4] We detail these frameworks later in this report as context for its primary focus: sharing information exchanged and conclusions reached by learning group members. We structure this document as a guide for local governments, laying out important information, resources, and actions that they can use to equitably improve the efficiency of their rental housing.

---

[2] USDN is a member-driven network of local government professionals dedicated to creating a healthier environment, economic prosperity, and increased race and social equity. More information on the network can be found here. In its first year, the learning group participants were limited to local government sustainability staff. As reflected here, many of the first-year sessions focused on identifying stakeholders that play crucial roles in the adoption and implementation of rental energy efficiency initiatives. Future learning group sessions may involve increased participation from these groups and individuals.

[3] Appendix B offers additional information about learning group meetings.

[4] The Mary Robinson Foundation (2020) defines climate justice as that which "links human rights and development to achieve a human-centered approach, safeguarding the rights of the most vulnerable people and sharing the burdens and benefits of climate change and its impacts equitably and fairly." The Alliance for Housing Justice (2020), in its ***Housing Justice National Platform for a Home Guarantee,*** lays out its principal tenets as follows: "We believe that housing is a human right, not a commodity to be bought and sold for profit. We believe that everyone should be guaranteed an affordable, safe, and healthy place to call home. We believe that homes must be accessible for people with physical or other disabilities, as well as to where people work, go to school, and have built a community. And we know that to build a just housing system, we must start now."

USDN's Focus on Race and Social Equity and the Outcomes of Its Work

Since 2013, local governments across the United States and Canada have worked collaboratively through USDN to develop more equitable approaches to environmental policymaking and implementation (Park 2014). This shift occurred five years after the network's founding and was driven by member requests. In response, USDN developed a set of equity principles and commitments, listed in Appendix A, to guide the development of member programming, internal staff work, and partnership formation. USDN members also reached a shared understanding that equity in sustainability practice consists of four elements:

- ***Procedural equity.*** Local governments offer inclusive, accessible, authentic engagement and representation in the process of developing or implementing sustainability programs and policies.
- ***Distributional equity.*** Local governments design sustainability programs and policies to result in fair distribution of benefits and burdens across all segments of a community, prioritizing those with highest need.
- ***Structural equity.*** Local government decision makers institutionalize accountability so that decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
- ***Transgenerational equity.*** Local government decision makers consider generational impacts and avoid placing unfair burdens on future generations (Park 2014).

This framework of equitable sustainability practice has guided local governments in altering the community engagement, decision making, and accountability practices they use to set, implement, and evaluate sustainability goals and policies (Samarripas 2020). Although 35 of the 100 cities included in ACEEE's *2020 City Clean Energy Scorecard* took at least one of these actions in reforming their approach to clean energy planning and policy implementation, the majority have yet to pursue such strategies (Ribeiro et al. 2020).

Policy and Program Guide Structure

This report lays out a series of local government actions that are designed to reduce energy use in rental properties, preserve or increase housing affordability, and build the capacity of local communities to design, implement, and evaluate more equitable policies.[5] We provide local government decision makers with a menu of policy and program options to consider, and share information designed to help them weigh the benefits and challenges of pursuing the various strategies. In particular, the actions we describe are meant to help local leaders design and implement rental energy efficiency policies that achieve desired policy outcomes while better anticipating potential unintended consequences. Figure 1 shows the four critical steps needed to achieve this.[6]

[5] In this report, we define race and social equity consistent with the shared understanding of USDN members describe don page 2; see the page 2 text box and Appendix A for details.

[6] Our report focuses primarily on approaches to policy and program design, adoption, and implementation, but we also explore some elements of how these initiatives are evaluated.

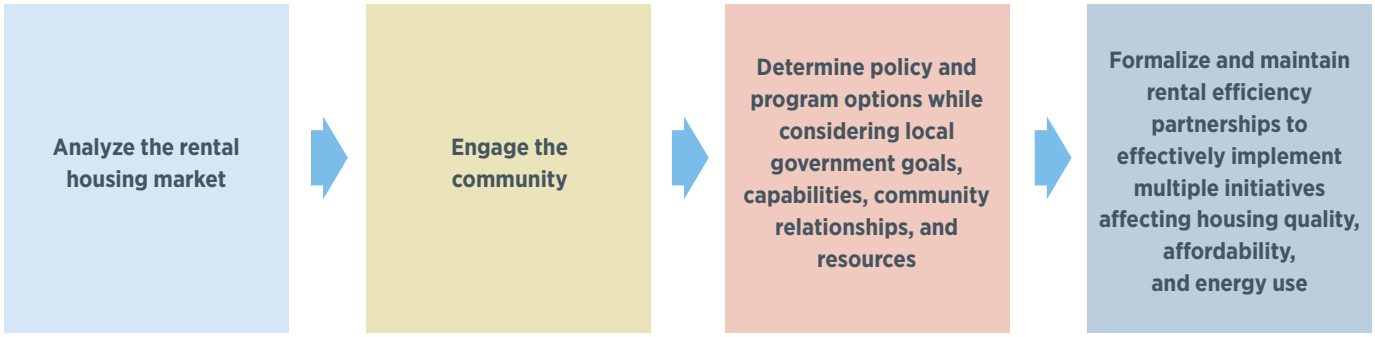

Figure 1. Steps in designing and implementing more equitable rental energy efficiency initiatives

In the following pages, we first describe recent national housing trends that are leading to unaffordable housing and energy costs for renters.[7] We then discuss data sources and methods that local governments can use to characterize their own communities' rental housing stock and renter cost burdens. We focus on those data that are best positioned to inform the design and implementation of more equitable local policies and programs.

While data analysis is a helpful first step in narrowing a local government's focus to the specific rental housing types and renter groups that stand to be most affected by energy efficiency initiatives, engaging the community is a critical next step. Community engagement is necessary to craft policies and programs that fully address the interests and daily lived experiences of groups that have been historically excluded from local decision making. When done equitably, community engagement can strengthen community relationships and leave localities better equipped to respond to the climate change and energy challenges they face. We describe the key elements of equitable community engagement and contrast this approach with other efforts to engage with the public at large and specific stakeholder groups and organizations.

Analyzing the rental housing market and conducting community engagement may narrow a locality's list of possible rental efficiency policies and programs, but local governments will still need to weigh other considerations. We will discuss various factors to consider in narrowing down the list of policy and program options; critical among these factors is a focus on achieving equitable outcomes. To analyze which local government rental efficiency initiatives have the potential to achieve equitable outcomes, we first describe the Just Transition principles and the 3Ps framework of protecting tenants, preserving communities, and producing housing that guided similar discussions in USDN's rental housing energy efficiency learning group. We then explore how local governments are currently pursuing rental energy efficiency strategies in line with the principles of these frameworks. Using data from ***The 2020 City Clean Energy Scorecard*** and ACEEE's State and Local Policy Database, we describe the components of local mandatory, incentive, financing, and informational rental efficiency initiatives that align with these values and aims (Ribeiro et al. 2020; ACEEE 2021). To our knowledge, this is the first comparative study to examine these parallels.

Finally, we lay out several city policy and program case studies that illustrate the importance of formalizing and maintaining partnerships with stakeholders and community residents in designing, implementing, and evaluating rental energy efficiency initiatives. We gathered case study information from USDN learning group presentations, relevant published reports and data, and follow-up correspondence with local government staff.

Some of the policies and programs described here are designed to increase renters' access to energy efficiency, while others are designed to motivate landlords to reduce energy use in their properties.[8] For initiatives targeting property owners, we primarily focus on those who own properties that are likely to have more affordable rents for, and be home to, LMI households. Most rental units that are affordable to those with low incomes are owned by individuals and are not professionally managed (Collinson 2011). These are typically single-family homes and multifamily buildings with less than five units that do not receive government subsidies to maintain affordable rents (Lee 2017). We also discuss initiatives that target larger multifamily properties with government-regulated rents attached to subsidies.

[7] Gross renter housing costs, which include rent and utility bill payments, are typically considered unaffordable if they consume more than 30% of a rental household's income (JCHS 2020). Energy cost burdens—that is, the share of a household's income spent on energy bills—are typically considered unaffordable if they exceed 6% of household income (Drehobl, Ross, and Ayala 2020).

[8] We use the terms ***rental property owners*** and ***landlords*** interchangeably throughout this report. While property owners have ultimate control over the condition and rents of their units, some may cede these decisions to property managers that owners employ to care for the day-to-day needs of a property and its residents.

Analyze the Rental Housing Market

NATIONAL RENTAL HOUSING AND ENERGY COST BURDEN TRENDS

Data from Harvard University's Joint Center for Housing Studies (JCHS) reveal that renters of color, renters who are 55 or older, and low-income renters are encountering increasingly high ***housing cost burdens***—defined as spending more than 30% of household income on housing costs (including utility bills). The share of these groups experiencing housing cost burdens increased by 3–7 percentage points between 2001 and 2018. The proportion of all renter households experiencing housing cost burdens also increased by 7 percentage points over this period. These cost burdens are most pronounced among those with lower incomes. As figure 2 shows, in 2001, 65% of renter households earning less than $30,000 per year had housing costs burdens;[9] as of 2018, 73% of these households were cost burdened (JCHS 2020).

Share of Renter Households with Cost Burdens (Percent)

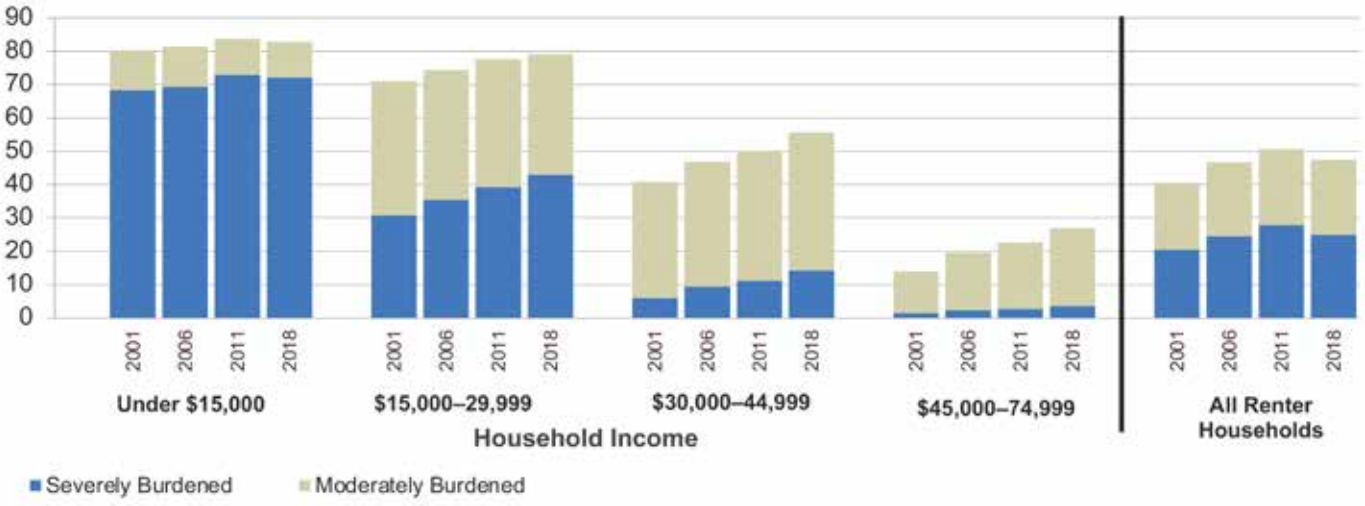

Figure 2. Despite overall improvement after 2011, renter cost-burden rates for most income groups have been on the rise

Notes: Household incomes are adjusted for inflation using the Consumer Price Index for All Urban Consumers (CIP-U) for All Items. Moderately (severely) cost-burdened households pay more than 30% (more than 50%) of income for housing. Households with zero or negative income are assumed to have severe burdens, while households paying no cash rent are assumed to be without burdens.
Source: Harvard Joint Center for Housing Studies, *America's Rental Housing 2020*, 2020, www.jchs.harvard.edu. All rights reserved.

[9] All income values from JCHS (2020) have been adjusted for inflation using the CPI–U.

The Census Bureau's Household Pulse Survey has been tracking the COVID-19 pandemic's social and economic effects on households, including data that can be used to compare renter finances to those of homeowners (Census Bureau 2021c). By late March 2021, 51% of renter households reported losing employment income because of the pandemic, compared to 38% of homeowners. At the close of 2021's first quarter, 17% of renters reported being behind on rent, while only 9% of homeowners were behind on their mortgage. The survey also revealed that the pandemic has had a disproportionate effect on renters of color and low-income renters, with 29% of Black, 21% of Hispanic, and 18% of Asian households reporting that they were behind on rent, compared to only 11% of white renters. Of renters earning less than $25,000, roughly a quarter were behind on rent at the end of March 2021, while nearly one out of every five renters earning between $25,000 and $49,999 were behind on rent—which is nearly double the share of those earning $50,000–99,999 and nearly four times that of renter households earning $100,000 or more (JCHS 2021b). Further, this loss of rental revenue had the greatest impact on the financial stability of landlords with smaller property portfolios, who are more likely to own unregulated affordable housing. This loss has led many of these landlords to delay building capital and maintenance improvements that could increase energy efficiency and lower utility costs (Choi and Goodman 2020; De La Campa 2021; Reina and Goldstein 2021).[10] The combination of lost rental revenue, high operating expenses, and lower earnings from other sources also increased the pressure on these owners to sell their properties, potentially reducing the available affordable housing stock (Choi and Goodman 2020).

Several factors underlie the long-term increase in rental housing cost burdens. In recent years, real incomes have increased only slightly for all but the wealthiest U.S. households, and the supply of rental housing remains tight. Between 2006 and 2018, housing supply roughly kept pace with demand, but growth in rental units occurred mostly among those with monthly rents of $1,000 or more. In contrast, units with rents of less than $600 declined sharply over this same period (JCHS 2020). Figure 3 shows these changes.

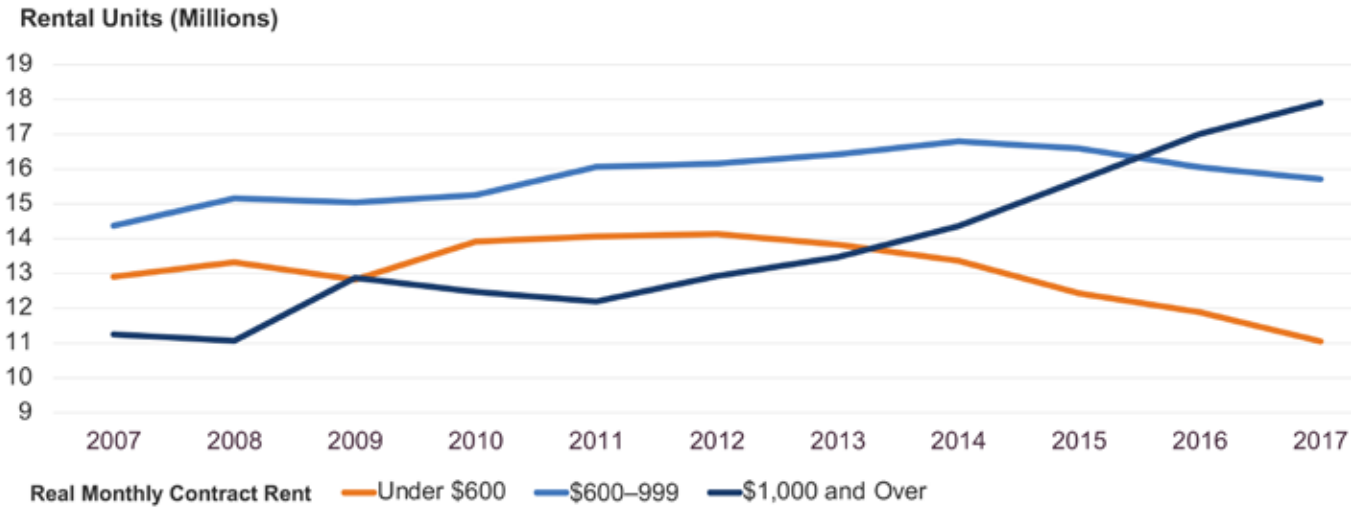

Figure 3. Strong growth in high-cost rentals has coincided with dramatic declines in low-cost units

Notes: Rental units may be occupied, vacant for rent, or rented but unoccupied; excludes units occupied without cash rent. Dollar values are adjusted for inflation using the CPI-U for All Items Less Shelter. Contract rent excludes all utilities paid separately.
Source: Harvard Joint Center for Housing Studies, *America's Rental Housing 2020*, 2020, www.jchs.harvard.edu. All rights reserved.

This change in supply was in part a response to an increase in the number of higher income households renting rather than buying homes. Between 2010 and 2018, the number of renter households earning $75,000 or more per year increased by 3.2 million—a 45% increase, and the largest source of renter household growth over that period (JCHS 2020).

This has left low-income renters unable to find affordable rents in high-quality units; they are thus leasing lower-quality units in buildings that may be far from work or school, have few amenities, need repairs, require weatherization, or lack

[10] Unregulated affordable housing is sometimes referred to as naturally occurring affordable housing (NOAH) because it offers low rents without having to be subsidized to do so.

energy-efficient lighting and appliances. JCHS (2020) data indicate that renters are leasing lower-rent housing even if it is of lower quality. Vacancy rates in moderate- and lower-quality rental housing are one-third lower than that of the highest-quality properties. The result is that nearly one-third of renter households—13.2 million—have a high energy burden, using more than 6% of their income to pay energy bills (Drehobl, Ross, and Ayala 2020).

Renters have little control over the housing conditions that lead to high energy burdens. Property owners must approve any structural, equipment, or major appliance upgrades; even when allowed, many renter households are unable to afford the upfront cost of these upgrades on their own. Further, if property residents pay their own energy bills, landlords have little reason to invest in energy efficiency upgrades that will lower their renters' energy use and costs (Bird and Hernandez 2012). This barrier to energy efficiency improvements is referred to as the ***split incentive challenge***. While split incentives can impede energy efficiency upgrades of any kind, they are a particular barrier for electricity upgrades in renter units. More than 90% of renters pay for their own electricity use, and renter households earning less than $25,000 spent a median of 8.4% of their income on electricity alone (Frost 2020).[11] Low-income renters also face barriers in completing the few energy-efficient improvements that can be made without landlord approval. For example, research shows that low-income and Black urban neighborhoods may lack the large retail stores that typically stock a large supply of low-cost energy-efficient light bulbs. Reames, Reiner, and Stacey (2018), for example, found that low-income and Black neighborhood retail stores in Wayne County, Michigan, typically have few efficient light bulbs available, and those that are sold are typically much more expensive than less-efficient light bulbs.

Some utility energy efficiency programs do serve rental properties, but they are unlikely to reach low-income households unless they are specifically designed to do so. Untargeted programs may not offer financially feasible or otherwise practical offers for owners of low-income rental properties and may use marketing strategies that do not appeal to them (Frank and Nowak 2016; Samarripas and York 2019). Research has also shown that the spending of programs that do target low-income customers has not been in proportion to the size of the nation's low-income population (Reames, Stacy, and Zimmerman 2019; EDF 2018).

Lowering high renter energy burdens will require more than the current levels of private sector and utility efficiency program investment. As we detail throughout this report, local governments have an important role to play in spurring rental property retrofit projects. However, like utility programs, local governments are unlikely to reach low-income renters and renters of color unless they are intentionally designing policies and programs to do so. Below, we describe several data sources that local governments can use to better target their rental energy efficiency strategies to these groups.

ASSESSING LOCAL RENTAL HOUSING AND ENERGY TRENDS

Designing targeted and effective rental efficiency policies and programs begins with local governments assessing available data that characterize their community's rental housing and the housing cost burdens that their residents face. Local governments can begin an analysis of their local rental housing market by reviewing the metropolitan area data available through the Harvard University Joint Center for Housing Studies' rental housing research portal and the U.S. Census Bureau's American Housing Survey (Census Bureau 2021a; JCHS 2021a). Policymakers and stakeholders can find aggregated city, county, and census tract data describing owner-occupied and renter-occupied homes using data from the Census Bureau's American Community Survey (Census Bureau 2021b).[12] These data can be used to get a sense of the distribution of owner-occupied and renter-occupied housing units, the mix of rental housing types (single-family, small multifamily, large multifamily), and renter demographics in a particular area. Rental housing stock age can also be indicative of its energy efficiency, as older rental housing tends to be less efficient (La Jeunesse 2016).

[11] Median household income spent on electricity costs reflects only those who paid their own electricity bills. While available data indicate that most renters pay for natural gas use, this is a smaller share compared to those who pay for their own electricity. Analysis of natural gas use is complicated by the fact that many rental units do not use natural gas, and some renters split natural gas costs with their landlords between different end uses (EIA 2018; Samarripas and Tanabe 2020; R. Frost, research analyst, Joint Center for Housing Studies of Harvard University, pers. comm., March 20, 2021).

[12] American Community Survey results are currently available as estimates covering one-year and five-year periods. Estimates covering three-year periods are available only for 2005–2013. In general, one-year estimates are more reliable for geographies with large populations (65,000 people or more), while five-year estimates are more appropriate for smaller populations. However, the use of one set of estimates over another may depend on research needs. For more guidance, see census.gov/programs-surveys/acs/guidance/estimates.html.

Localities would do well to also assess how these characteristics change over time. For example, the Baltimore Neighborhoods Indicators Alliance, a local research organization affiliated with the University of Baltimore, has observed that declines in owner-occupancy often precede rising housing cost burdens for renters (Iyer 2021). Local governments should also closely examine community-wide and neighborhood-specific trends in population change, as such trends can be indicative of several needs and challenges that landlords and renters face:

- *Growth* may be indicative of rising housing costs and an increased risk for displacement of low-income households from a community.
- *Stability* suggests that rental housing may need rehabilitation.
- *Decline* is associated with increasing housing vacancy, high unemployment, and poverty.

Determining individual building characteristics can be difficult, and this can be especially true for affordable properties. However, several resources are available to policymakers that may help in this regard. Local governments would do well to begin by consulting their own internal staff and local stakeholders. Local government housing and community development departments, as well as local nonprofit and community organizations, may be able to help local government sustainability staff identify rental properties and those in need of energy efficiency upgrades (Elevate Energy 2021). The National Housing Preservation Database and CoStar's proprietary property database each provide data on specific rental properties in cities. Combining data from these multiple resources can give policymakers and stakeholders a more complete picture of their city's rental properties.

Rental Housing and Energy Data Resources

Harvard University JCHS Rental Housing:
jchs.harvard.edu/research-areas/rental-housing

U.S. Census Bureau Explore Census Data Portal:
data.census.gov/cedsci/

U.S. Census Bureau American Housing Survey:
census.gov/programs-surveys/ahs.html

National Housing Preservation Database:
preservationdatabase.org/

ACEEE's Energy Burden Report:
aceee.org/energy-burden

U.S. Department of Energy LEAD Tool:
energy.gov/eere/slsc/maps/lead-tool

Zero Cities Project:
usdn.org/projects/zero-cities-project.html

Housing cost and energy burden data resources are available to policymakers and stakeholders, too, and can help local government staff direct resources toward those with the highest housing and energy cost burdens. Local housing and community development departments may have already conducted recent assessments of their local housing cost burdens and affordable housing needs. For example, the City of Somerville, Massachusetts, has been using the results of its 2017 *Assessment of Fair Housing* to help guide discussions in an internal working group of city departments focused on developing strategies to improve rental property energy efficiency (Andrews 2020).[13] Appendix C offers guidance on organizing an internal local government working group like the one in Somerville. The Census Bureau also collects housing cost burden data for the American Community Survey (Census Bureau 2021b). Using these survey data, local government staff can obtain community-wide and census-tract-specific information on the share of renters using more than 30% of their income to pay rent and utilities. These data can be further divided into various income brackets. Local governments can use this information to determine how many renter households experience moderate or severe cost burdens, and the degree to which these burdens may be higher for those with low incomes.

Key U.S. Census Bureau American Community Survey Data Tables

- B01003: Total population
- B25032: Tenure by units in structure
- S2502: Demographic characteristics for occupied housing units
- B25036: Tenure by year the structure was built
- B25070: Gross rent as a percentage of household income in the past 12 months
- B25069: Inclusion of utilities in rent

Drehobl, Ross, and Ayala (2020) analyzed American Housing Survey energy burden data at the national, regional, and metropolitan levels. They then characterized how energy burdens are experienced across households of different incomes, races, ethnicities, and other characteristics in the 25 largest U.S. metropolitan regions. Localities

[13] Somerville's *Assessment of Fair Housing* is available at somervillema.gov/housing.

outside these metro areas, and those wanting additional local data, can use the U.S. Department of Energy (DOE) Low-Income Energy Affordability Data (LEAD) tool to find modeled energy burden data at the county, city, or census tract level (DOE 2019). While energy burden data are a good starting place for characterizing the energy-related inequities that many communities experience, local governments can use additional resources to guide them in characterizing other inequities that renters face. For example, the Zero Cities Project's Equity Assessment Tool offers local governments guidance in how to analyze housing and energy burden data alongside other economic, health, environmental, and community engagement data that characterize local inequities (Race Forward 2019).

While the data sources described here are helpful in characterizing rental housing and its residents, obtaining more-detailed housing and energy cost burden data, past energy efficiency improvement records, and energy performance data for specific rental properties and units remains a challenge for local governments. Among the challenges that cities and counties face are those related to data collection methods, utility customer privacy requirements, and coordination between service providers and utility companies.

Although our guidance here focuses on obtaining and using quantitative data, qualitative data regarding the lived experiences of renters are also valuable to assess the energy and housing challenges they face. As we describe in the following section, some of this information may be obtained through community engagement; however, it can also be helpful to do qualitative research using surveys, interviews, focus groups, and ethnographic methods. We recommend that local governments partner with local universities or other research institutions to conduct this work to ensure that it is rigorous and useful in directing policy planning and implementation.

Engage the Community

Engaging low-income renters and renters of color at the start of planning and implementing rental home energy efficiency initiatives is critical for ensuring that these policies and programs can meet their needs equitably and effectively. Community engagement should be designed to increase the ability of historically marginalized groups to affect and direct local policy while honoring and valuing their knowledge and traditions, strengthening their solidarity with one another, and expanding their ability to direct the course of their own lives. We highlight several community engagement best practices and resources in the text boxes in this section. Community engagement can benefit entire communities. It expands a community's ability to respond to economic, ecological, and social crises by bringing the full range of its collective knowledge, skills, and resources to bear on local challenges (González 2020). Bergstrom et al. (2012) outline several benefits of community engagement:

- *Legitimacy and increased support for plans and projects.* With the substantive engagement of affected communities, developed plans will reflect legitimacy, community support, and incorporate equity outcomes. Legitimacy builds trust, political will, and ownership for effective implementation.

- *Improved community-government relations.* Community engagement can build trust among diverse stakeholders and help improve the quality of difficult discussions about racial disparities, economic conditions, and community development needs. Creating a multifaceted process on a foundation of relationship building, trust, respect, and affirmation of community knowledge and power allows more effective ways of dealing with difference to emerge.

- *Deeper understanding of the issues.* Regional housing plans will be stronger with the input of the people who are facing and addressing housing challenges. Regional economic opportunity plans benefit through the significant engagement of residents and organizations that have knowledge of the barriers to job access and experience in addressing these challenges.

- *Increase in community capacity.* A meaningful engagement strategy will improve problem-solving capacity. Engagement builds stronger networks across racial, ethnic, generational, gender, and socioeconomic divides, which is essential to achieving equitable outcomes and leveraging additional resources outside of public processes.

- *Reduced long-term costs.* Plans and development projects often end up in litigation when community engagement is absent or poor and thus fails to effectively craft consensus. While conflicts may arise during planning (especially when there is a history of failed projects or unrealized promises), the community engagement process creates an environment of positive communication where creative and inclusive solutions to conflicts can be found.

- *Democracy in action.* Community engagement is, in many ways, a microcosm of our American democratic system of government. It is one of the best ways that community residents can connect to and shape local and regional decision-making processes.

Upright Consulting Services (2020) describes how community engagement can achieve what other common forms of interaction between local governments and their residents cannot:

Community engagement is designed to specifically reach those who have been historically marginalized from decision making or have experienced disproportionately high burdens and low benefits from policies and programs.

Public outreach is primarily meant to be informative and to broadly appeal to the public, typically without targeting specific populations. It is most often limited to one-way communication between a local government and its residents, and leads to minimal, if any, public input.

Stakeholder engagement is more targeted and designed to elicit feedback from those with perspectives relevant to one or more aspects of a proposed initiative. It focuses on engaging with people or organizations that have historically been recognized as having a direct stake in a policy or program and its effects. In the rental market context, property owners are a particularly important stakeholder group as they are the principal decision makers in authorizing and funding retrofit projects.

Selected Local Government Community Engagement Best Practices

(J. Hays, principal, Upright Consulting Services, pers. comm., April 22, 2021)

- Engage early and throughout policy design, implementation, and evaluation.
- Orient your work toward learning about and co-creating plans, policies, and programs with communities.
- Invest in engaging the right people and groups by conducting power mapping or ecosystem mapping to target early engagement activities.
- Do your homework. Learn about community priorities, interests, history, and data before engaging. Do not expect communities to educate local governments on these topics.
- Build capacity for good engagement by providing the resources communities need to engage and by building engagement skills among local government staff.
- Be transparent about your decision making processes and about your department or office's authority, accountability, and responsibility.
- Follow up and follow through. Be accountable by sharing your work. Tell the story of what you learned from community engagement, how that learning influenced or is influencing decisions, and what the outcomes are or are expected to be.

Variations exist within these three broad approaches based on a local government's motivations for communicating with its residents. Ultimately, a local government should structure its approach based on the goals and impact it wants to achieve. However, local governments that are motivated to lower rental property energy use should keep in mind that, "public outreach and stakeholder engagement focused on landlords and building owners is unlikely to produce the insights and imperatives that will ensure energy efficiency programs for rental properties will advance equity" (J. Hays, principal, Upright Consulting Services, pers. comm., April 22, 2021).

In Rhode Island, the City of Providence's approach to creating its ***Climate Justice Plan*** is an example of the type of community engagement discussed here. The city created the Racial and Environmental Justice Committee (REJC), which comprises 10 community members of color, to lead the city's climate planning engagement process. To inform the plan's development, the committee hosted sessions to educate 10 additional community members on energy systems and energy democracy.[14] With the help of these additional community members, the REJC then conducted 40 interviews with the broader community to learn how the city's fossil-fuel-based energy system had affected them. The REJC used the information gathered from these interviews to develop a ***Climate Justice Plan*** that addresses many economic, ecological, and social problems that the city's communities of color face (Providence 2019). We note that, while the City of Providence formed its own committee to conduct community engagement, other communities may want to take a different approach. For example, some local governments may be able to collaborate with existing networks of community-based organizations that have established relationships with renters and other historically marginalized groups to conduct effective community engagement (Bergstrom et al. 2012).

[14] According to the Climate Justice Alliance, energy democracy "represents a shift from the corporate, centralized fossil fuel economy to one that is governed by communities, is designed on the principle of no harm to the environment, supports local economies, and contributes to the health and well-being for all peoples" (CJA 2021). The ***Climate Justice Plan*** references the Climate Justice Alliance's definition of energy democracy (Providence 2019, 37).

Community Engagement Best Practice Resources

Community Engagement Guide for Sustainable Communities (PolicyLink and Kirwan Institute)
policylink.org/resources-tools/community-engagement-guide-for-sustainable-communities

Process Guide for City-Community Relationships (Facilitating Power and Upright Consulting)
equitymap.org/process-guide

The Spectrum of Community Engagement to Ownership (Movement Strategy Center)
movementstrategy.org/directory/spectrum/

A Guide to Community-Centered Engagement in the District of Columbia (Georgetown Climate Center)
georgetownclimate.org/reports/community-centered-engagement-in-dc.html

Beyond Inclusion: Equity in Public Engagement (Wosk Centre for Dialogue)
https://www.sfu.ca/dialogue/resources/public-participation-and-government-decision-making/beyond-inclusion.html

Civic Engagement: A Transformative Guide (Kirwan Institute)
kirwaninstitute.osu.edu/research/civic-engagement-transformative-guide

Figure 4 lays out six ways that local government engagement or outreach with the public can diverge in terms of expected outcomes, activities, and resources. The approaches are ordered from those least likely to be inclusive for historically marginalized groups (such as public outreach approaches) to those more likely to include these groups (such as stakeholder engagement) and finally to those most likely to be inclusive and align with community engagement.

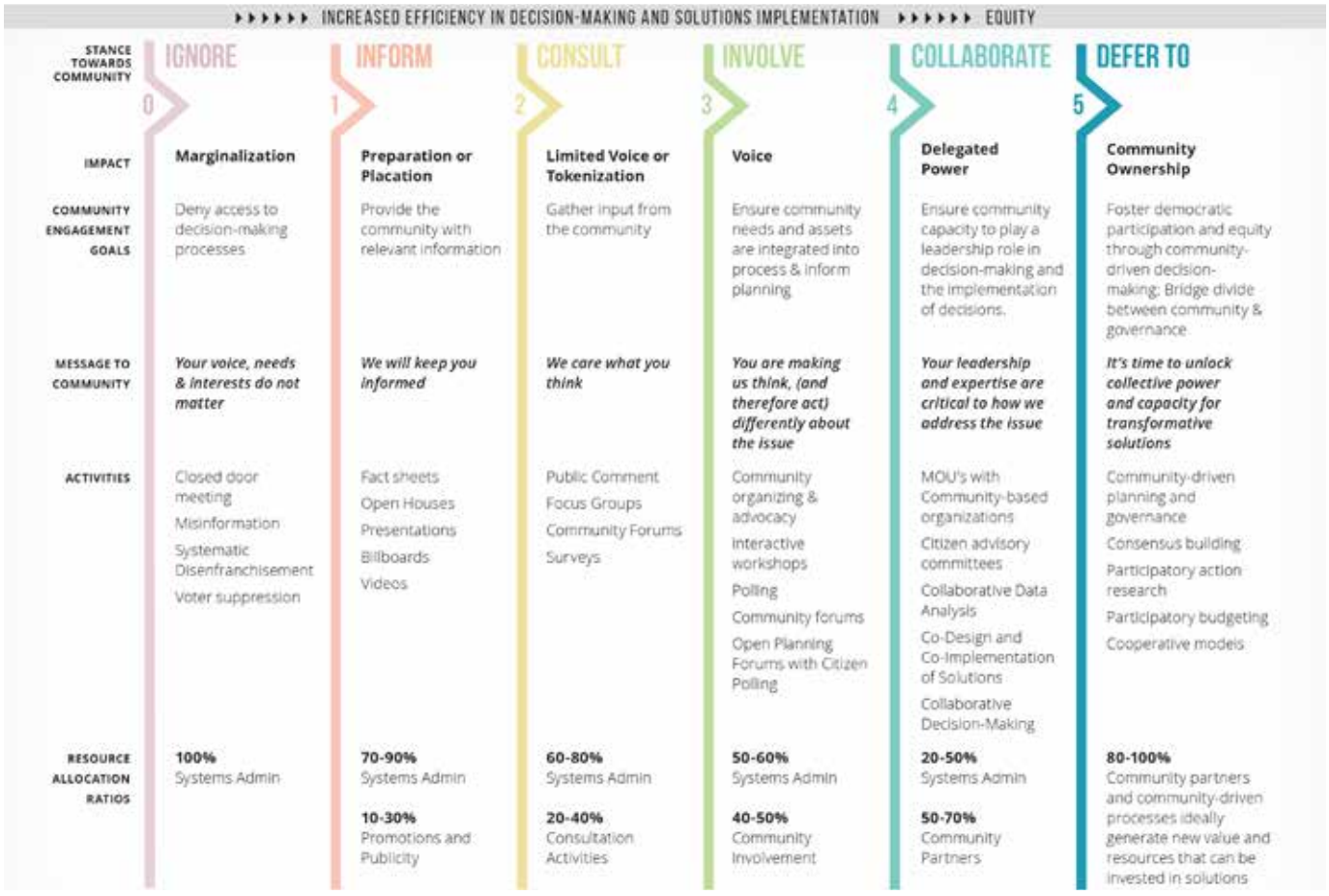

Figure 4. The engagement to ownership spectrum

Source: González 2020

Later in this report, we examine case studies of local government policies and programs designed to improve rental property efficiency. In each case, we highlight how local governments have used public outreach, stakeholder engagement, or community engagement strategies to create and implement their initiatives.

Build a More Just, Affordable, and Sustainable Housing Economy

In determining their policy and program options, local governments must carefully consider how rental efficiency policies will specifically affect their local rental housing market and the lives of renters. A locality that focuses only on the immediate outcomes of policies or programs may miss the indirect or delayed effects those initiatives have on overall housing affordability, residents' upward mobility, job opportunities, and neighborhood investment. For example, supporting retrofit projects in properties that are not already required to keep rents affordable for low-income residents may lead property owners to increase rents, potentially displacing low-income residents and adding to the housing affordability issues that many communities face. On the other hand, an increase in rental property retrofits may also increase the demand for clean energy jobs and attract additional investment to a community. To better consider outcomes such as these, local sustainability professionals must understand the current housing market and have a vision for how to use specific initiatives to improve the lives of renters, especially those that have been historically marginalized.

CHALLENGES RENTERS FACE IN TODAY'S RENTAL HOUSING MARKET

During and immediately after the 2007–2009 Great Recession, rental housing growth occurred mainly through conversion of owner-occupied single-family homes to rental properties (JCHS 2011). In recent years, rental property construction has increased through the development of new multifamily buildings, but these are often designed and priced for higher-income households (JCHS 2020). The effect has been that the more affordable existing rental housing supply remains limited, leading owners and other investors in those properties to increase their income by increasing residents' rents, deferring maintenance, and minimizing the scope and first costs of capital projects. This, in turn, creates a feedback loop whereby rental properties' increased net operating incomes make properties more valuable, which attracts the attention of lenders and other investors wanting to further increase the value of these properties and the income they generate, leading to further rent hikes, deferred property maintenance and rehabilitation, and increased pressure on owners to sell (Stratford 2020).

This feedback loop takes a pronounced toll on low-income renters. Wages and work opportunities for low-income workers have been mostly stagnant in recent years, and increasing rents have consequently consumed an increasing share of their incomes (NLIHC 2020). Landlords who have deferred property maintenance and capital improvement projects can also leave renters with energy-inefficient units that generate high utility bills that add to these cost burdens.

To keep pace with rising housing costs, many local governments have worked to accelerate worker income growth through economic and workforce development initiatives, but this may contribute to the feedback loop of rising property values and escalating housing costs as landlords and their investors work to capture increased income through rent hikes (Fodor 2010; Stratford 2020). As a result, these efforts may lead to only modest reductions in renter cost burdens and may increase energy use and emissions in other areas of the industries targeted by local governments for economic development (Stratford 2020).

ENVISIONING A MORE AFFORDABLE AND JUST RENTAL HOUSING MARKET

To break feedback loops like the one described on the previous page, the Climate Justice Alliance proposed an alternative vision for local economies through its Just Transition principles. Comprising 70 frontline communities, organizations, and supporting networks in the climate justice movement, the organization created its Just Transition principles to consolidate and synthesize the various principles guiding environmental justice advocates throughout the United States (CJA 2021). In relation to the rental housing market, the Just Transition principles envision an economy that shifts away from a predominant focus on extracting rents from residents toward one that opens up new opportunities for renters to exert more control over their housing choices and home energy use. The text box below lists and describes these principles.[15]

Just Transition Principles of the Climate Justice Alliance

- *Self-Determination.* Communities must have the power to shape their economies as producers, as consumers, and in our relationships with each other.
- *Equitable Redistribution of Resources and Power.* Actively work against and transform current and historic social inequities based on race, class, gender, immigrant status, and other forms of oppression. Reclaim capital and resources for the regeneration of geographies and sectors of the economy where these inequities are most pervasive.
- *Buen Vivir.* Live well without living better at the expense of others. Workers, community residents, women, and Indigenous Peoples around the world have a fundamental human right to clean, healthy, and adequate air, water, land, food, education, and shelter.
- *Meaningful Work*. Develop human potential, creating opportunities for people to learn, grow, and develop to their full capacities and interests. We are all born leaders, and a regenerative economy supports and nurtures that leadership. In the process, we transform our communities.
- *Culture and Tradition*. Create inclusionary spaces for all traditions and cultures, recognizing them as integral to a healthy and vibrant economy.
- *Solidarity*. Recognize our communities' interconnectedness as well as our issues.
- *Regenerative Ecological Economics*. Re-localize and democratize primary production and consumption by building up local food and clean energy systems and small-scale production that is sustainable economically and ecologically.
- *Build What We Need Now*. We must build the world we need now. This may begin at a local small scale and must expand to begin to displace extractive practices.

These principles also align well with affordable housing advocates' 3P goals:

- *Protecting* tenants' right to fair, affordable, healthy, safe, and environmentally sustainable housing
- *Preserving* communities and housing as affordable for low-income residents.
- *Producing* housing that is both affordable for low-income households and environmentally sustainable (3Ps Coalition 2021)

Local governments can take action to ***protect tenants*** by expanding their rights, enforcing housing laws fairly, and sharing information about how to secure affordable, healthy, safe, and sustainable housing. These efforts help address housing market inequities that favor landlords and increase renters' access to and knowledge of affordable and energy-efficient housing options.

Local governments can use several approaches to ***preserve the affordability of communities and housing***. As we have discussed, many communities are working to open opportunities for low-income renters to enter well-paying career fields, stabilizing and growing their income in the process. Other localities are attaching housing affordability requirements to development policies and incentive or financing programs. Some are also using existing community social networks and local knowledge to enhance community resilience. We highlight one such example in Minneapolis later in this report. These efforts preserve communities and keep them affordable.

Finally, some local governments are using subsidies to encourage the ***production of new affordable housing***. This helps answer the immediate needs of low-income renters and helps build a regenerative economy.

[15] The Just Transition principles shown in the text box have been adapted from CJA 2021 descriptions.

Determine Rental Efficiency Policy and Program Options

Local governments have pursued a wide array of strategies to improve rental property efficiency in their communities. This section outlines the strategies that further at least one of the 3P goals—protecting tenants, preserving the affordability of communities and housing, and producing new affordable housing—and at least one Just Transition principle. As we will show, local governments seeking to equitably reduce rental home energy use will likely need to employ several strategies, as no one strategy aligns with all principles. Table 1 includes a list of these policy strategies, a breakdown of how they align with 3P goals, and the actors that each initiative is primarily designed to motivate. While we list the primary groups that each policy or program targets, local governments will want to form partnerships with multiple stakeholders; we provide a more comprehensive list of these partners for each type of initiative later in the report.

Table 1. Summary of rental energy efficiency initiative options

Rental energy efficiency policy options that align with 3P goals	Initiative is primarily designed to spur action by:			
	Renters	All rental property owners	Affordable rental property owners	Utility regulators
Protecting tenants				
Granting renters the right to make efficiency improvements	✓			
Adopting a renter right of first refusal on property sale	✓			
Creating a rental energy disclosure policy		✓		
Advocating to expand state and utility rental efficiency programs and remove barriers to increasing participation				✓
Promoting existing state and utility efficiency programs to renters and landlords	✓	✓	✓	✓
Preserving affordable communities and housing				
Adopting a rental energy performance standard and assisting affordable housing providers with compliance			✓	
Instituting limited-scope rental property retrofit requirements		✓		
Designing rental efficiency loan and grant programs with affordability covenants			✓	
Coupling public housing energy-efficient rehab projects with inclusive workforce development	✓		✓	
Producing new affordable housing				
Including energy efficiency in competitive affordable housing funding criteria			✓	

Local governments also need to carefully consider their own capacity to pursue these initiatives. Because we have primarily relied on data from *The 2020 City Clean Energy Scorecard*—which scores 100 of the largest U.S. cities on their clean energy strategies—many of the cities referenced in the subsequent section have large populations. Smaller localities may need to assess their own resources and interests when weighing the possibility of pursuing these strategies. While our research has tended to focus on large cities, several smaller local governments participated in the USDN rental housing energy efficiency learning group, and we have used their experiences to inform this report. In the following sections, we include tables—based on *City Scorecard* data and learning group information—that summarize the critical factors that localities should consider when assessing their ability to pursue these initiatives.

PROTECT TENANTS: EXPAND RENTER RIGHTS AND ACCESS TO INFORMATION

As we noted earlier, landlords ultimately decide whether to move forward with and fund rental property efficiency retrofit projects. They also decide the scope of such projects, ultimately determining the energy savings that can be achieved for an entire property. For this reason, most local government policies or programs targeting rental properties today will need to appeal to or compel landlords to act. However, several local governments have granted renters rights that allow them to make home energy efficiency improvements and are connecting renters with related informational resources and educational opportunities. Table 2, which follows at the end of this section, summarizes factors to consider when pursuing the following strategies, each strategy's alignment with the Just Transition principles, and resources to consult for further information.

Renter right to make efficiency improvements

Some localities, such as Hartford, Connecticut, have amended their housing code to grant renters the right to make certain energy-saving home improvements without obtaining property owner consent.[16] These upgrades are limited to those that do not change the building's structure or equipment and involve alterations that are easily removable or reversible; examples include adding removable weatherstripping and removable interior storm windows, and wrapping insulation around hot-water heating tanks. While local governments may amend their housing codes to grant renters these abilities, they still need to ensure that renters are aware of these rights and can act on them. Local governments can build partnerships with renter and landlord groups to raise awareness of these rights and work with state and utility energy efficiency programs to improve renters' access to low- or no-cost energy efficiency upgrades.

Renter right of first refusal on property sale

Other local governments, such as Washington, DC's, have adopted ordinances granting renters the right of first refusal on the sale of their rental homes, allowing them the opportunity to purchase their rentals when they go up for sale before other potential buyers, preventing potential housing displacement. As the new owner of the property, the former renter can make energy efficiency improvements, provided they have funding to do so. As with housing code amendments that grant renters the right to make certain efficiency upgrades, simply granting renters a right of first refusal may not be sufficient in itself to spur residents to intervene in a property sale. Again, however, local governments can work with renter and landlord groups to disseminate information about a right of first refusal, provide financial assistance, and "identify non-profit organizations that have experience conducting preservation transactions and can act as partners to help tenant associations throughout the process" (NYU Furman Center and Abt Associates 2021). This assistance is especially critical for renters who are interested in purchasing a costly multifamily property.

Renter Right of First Refusal and Energy Efficiency

In 2008, the St. Dennis Apartments in Washington, DC's Mount Pleasant neighborhood sat nearly vacant and in need of substantial repairs. The building's owner planned to sell the property, but its only remaining residents—Eva Martinez and her two daughters—intervened to purchase it with the help of a DC law that affords renters the right of first refusal on a rental property sale to a third party. The National Housing Trust-Enterprise Preservation Corporation provided the Martinez family with funding to purchase the property and oversaw a $10.2 million rehabilitation project that included health and safety improvements, energy efficiency upgrades, water conservation measures, and 250 kW rooftop solar system. Today, the building is affordable for low-income residents and utility costs have declined by 40% (Samarripas and York 2018).

Rental unit energy disclosure policy

Some local policies and programs geared toward protecting tenants are focused on increasing renter access to information about a dwelling unit's energy use and opportunities to improve its energy performance. Chicago and Minneapolis have both passed laws requiring landlords to disclose information characterizing a unit's past energy use to prospective residents so that they can better account for energy costs alongside rent and other expenses. Adopting this approach requires that landlords have access to information about a unit's energy use or costs, and utility companies may not currently provide this information. Local governments considering this approach can benefit from lessons learned from the implementation of local multifamily energy benchmarking ordinances, which also require that landlords have access to data characterizing renter energy use. Local governments should work with their utilities to ensure that property owners have access to historical energy use or cost data for rental units. In some cases, these data may be available only in aggregate for an entire multifamily property and thus can offer only an estimate of energy consumption and bills for a specific unit. Also, landlords sometimes must first obtain permission from renters to access their unit's energy use and utility billing data (ACEEE 2018). In such cases, local governments will need to provide ample time for landlords to secure these renter permissions before an ordinance goes into effect.

[16] New York University's Furman Center and Abt Associates (2021) describe housing codes as codes that "set minimum standards for housing conditions that all rental housing, new or existing, must meet to protect the health of residents. Some jurisdictions refer to them as property maintenance codes or sanitation codes, but their functions are the same."

Advocacy for state and utility rental efficiency programs and removal of barriers to increased participation

Local governments have also begun to advocate for reforming state and utility energy efficiency programs to better benefit renters. While requiring comparatively less funding and staff time than running a program, this approach requires local governments to build and maintain strong relationships with many energy efficiency and housing stakeholders. As the box below describes, several Massachusetts localities banded together to advocate for reforms to the state's rental property energy efficiency programs.

Retooling Utility Energy Efficiency Programs for Renters

In 2018, a coalition of local governments and regional planning agencies, along with housing and energy efficiency advocates, argued that the Massachusetts Department of Public Utilities (DPU) should take steps to increase utility energy efficiency programs and investments in rental properties, especially if they are home to low- and moderate-income (LMI) residents. These stakeholders called for utility programs to specifically target their marketing appeals to LMI communities and build stronger partnerships with local governments to help reach rental customers. The state's regulators agreed that rental properties should receive increased attention in program outreach and offered the state's electric and natural gas efficiency programs a performance incentive to increase rental property participation. The Massachusetts DPU also directed program evaluators to specifically assess renter participation in programs. Finally, regulators directed programs to offer a 90% cost incentive for landlords of low-rise buildings to complete all recommended insulation and air sealing (EEAC 2018).

Promotion of state and utility rental efficiency programs

Local governments can also take steps to ensure that energy efficiency programs are well known to landlords and renters. Hartford launched its Energy Equity Challenge to promote existing utility energy efficiency programs and drive both landlords and renters to take advantage of available offers. The city assisted prospective participants with identifying the program or programs that may meet their needs. To effectively deliver the program, Hartford worked with rental property owner associations, local utility energy efficiency programs, and groups that work with renters. To effectively complement utility energy efficiency programs, local governments will need to carefully design their promotions to target a specific population that is currently being underserved.

Table 2. Summary of rental energy efficiency initiatives that protect tenants

	Renter right to efficiency improvements	Renter right of first refusal	Rental energy disclosure policy	Rental efficiency program advocacy	Rental efficiency program promotion
Key partnerships	Local housing department Rental property owners Renter groups State and utility program managers	Local housing department Rental property owners Renter groups Nonprofit housing organizations	Local utilities Rental property owners	Other local governments Energy efficiency and climate advocates State and utility policymakers	Rental property owners Renter groups State and utility program managers
Critical adoption factors	Renter awareness of the right	Renter awareness of the right	Access to utility data Renter awareness of the right	Coalition-building ability	Targeted focus and support
Just Transition principles alignment	Self-determination Resource and power redistribution	Self-determination Resource and power redistribution	Self-determination Resource and power redistribution	Resource and power redistribution	Resource and power redistribution
Best practice resources	Developing practice	"Local Housing Solutions: Rights of First Refusal" (NYU Furman Center and Abt Associates)	"Energy Data Access: Blueprint for Action Toolkit" (DOE)	Developing practice	"Increasing Participation in Utility Energy Efficiency Programs" (ACEEE)

PRESERVE AFFORDABLE COMMUNITIES AND HOUSING: IMPROVE ENERGY EFFICIENCY AND PRESERVE AFFORDABILITY OF EXISTING RENTAL HOUSING

Energy performance requirements, along with incentive or financing programs, are the most common initiatives that cities use to improve the energy efficiency of rental properties. Regardless of their form, these energy efficiency strategies aim to motivate rental property owners to make energy-saving investments in their properties. These investments can take the form of loans, self-funding, or investment from limited partners; however, some owners may also take advantage of grants, direct incentives, or tax credits (Samarripas and York 2021). Many owners, lenders, and other investors will expect these investments to not only be repaid but also to generate a positive return through either increased net operating incomes or higher property sale values. This can lead owners to increase rents or sell properties, potentially displacing renters. Several local governments are working to prevent these outcomes through the design and implementation of the initiatives discussed below. Table 3, which follows at the end of this section, summarizes factors to consider when pursuing these strategies, each strategy's alignment with the Just Transition principles, and resources to consult for further information.

Rental energy performance standards and necessary compliance assistance for affordable housing providers

In recent years, several cities have adopted energy performance standards for existing rental properties, requiring that they meet specific energy or GHG emissions targets or perform a specified list of energy-saving actions. For example, New York City's standards require properties to achieve a GHG target while Washington, DC, and St. Louis, Missouri, require properties to comply with a minimum energy performance standard. Boulder, Colorado, requires rental property owners to meet a basic level of energy efficiency to maintain their rental license. Property owners can comply with these energy efficiency requirements by either pursuing a prescriptive list of energy efficiency measures or meeting an energy performance standard. The New York City, St. Louis, and Washington, DC, policies only apply to medium and large multifamily buildings, while Boulder's requirements are enforced for all licensed rental properties, regardless of size.

Nedwick and Ross (2020) argue that any locality pursuing a building energy performance standard should make special accommodations for affordable housing. Many affordable housing providers find it difficult to pursue energy efficiency retrofit projects because they have limited expertise, staff time, and funding to devote to such work. Local governments can support these property owners in complying with building performance standards by providing them with financial and technical assistance, modified or extended compliance periods and pathways, and lower or waived noncompliance fees for

Importance of Rental Registries and Licensing

Local governments wishing to adopt a building energy performance standard that includes rental housing will need to establish a compliance process to ensure that properties are meeting specified targets or actions. Property owners of larger multifamily buildings in New York City, St. Louis, and Washington, DC, demonstrate compliance with energy performance standards through the cities' mandated energy benchmarking reporting requirements. Local governments currently use ENERGY STAR® Portfolio Manager to benchmark property energy use, but the software is currently unable to benchmark multifamily buildings with fewer than 20 units. Localities without energy benchmarking requirements, or those in places with many smaller rental properties, may want to use a local rental registration or licensing process to monitor compliance (Bastian 2020). The Center for Community Progress (2021) describes rental licensing as "local regulation that requires an inspection or other substantive steps as a condition of renting property." This differs from rental registration, which only requires landlords to register a property with a local government and share certain descriptive information. In addition to tracking compliance with an energy efficiency standard, rental registries and licensing offer local sustainability staff an avenue to communicate directly with landlords about other available energy efficiency opportunities.

Staff working for the City of Denver recently investigated the possibility of establishing rental registration or licensing for long-term rentals as a first step toward potentially adopting rental property energy performance standards. Staff found that establishing a licensing program, rather than a registry, would be ideal because it would use verification procedures to ensure property owner compliance with standards. They further found that local governments must ensure that their housing inspectors have the capacity and expertise to verify energy standards are met or explore the possibility of using third-party inspectors. Localities also need adequate software to manage inspection and other compliance data. Finally, a local government must have a robust strategy to communicate property standards and compliance information to landlords (Saporito 2019).

those who can demonstrate partial compliance. In many cases, local governments may want to work with state and utility energy efficiency programs and other partners to give housing providers financial and technical assistance.

Limited-scope rental property retrofit requirements

While some local governments have adopted energy performance standards to improve whole-building energy use, other cities require landlords to make a more limited set of energy efficiency upgrades to keep retrofit costs manageable. These policies may also include project cost caps. Such retrofit requirements may be triggered by a major capital event such as property sale or renovation. Both San Francisco and Burlington, Vermont, have adopted these policies.[17]

San Francisco established its Residential Energy Conservation Ordinance in 1982. The policy requires owners of residential buildings to complete energy efficiency upgrades when selling or renovating a property. Properties undergoing a metering or condominium conversion are also subject to upgrade requirements. One- and two-unit homes subject to the ordinance are required to make a series of insulation and envelope improvements. Larger residential properties are required to make these improvements, as well as insulate steam and hot-water pipes and tanks, clean and tune boilers, repair boiler leaks, and install a time clock control on the burner. Upgrades must be inspected either by a city building inspector or a private energy inspector certified by the city. Improvements in one- and two-unit homes are capped at $1,300. Properties with three or more units have a cost cap set at 1% of the building's assessed value or 1% of the purchase price if the property is being sold (San Francisco 2009).

In 1997, Burlington passed a recently replaced Minimum Rental Housing Energy Efficiency Standards Ordinance that was similar to San Francisco's policy. That law required landlords to make a series of insulation and building envelope improvements when selling a property. Upgrades had to be inspected by Vermont-licensed mechanical engineers or inspected and certified by the city's program administrator and engineer. The city capped the cost of these retrofit projects at 3% of the property sale price or $1,300, whichever was less (Burlington 2021b). In 2021, Burlington replaced these requirements with a mandate to weatherize all long-term rental properties with high energy use. The city's municipal utility will assess the energy use of rental properties and reach out to those subject to the ordinance's provisions. The new requirements include a retrofit project cost cap of $2,500 which will be adjusted based on inflation changes (Burlington 2021a, 2021c).

Property energy efficiency improvements, while limited in scope, can reduce renters' energy burdens. Further, the improvements' limited scope and the inclusion of retrofit cost caps reduce the likelihood that such projects will compel owners to raise rents on their residents. Local governments considering adopting similar policies should consider the capacity of their own building inspectors or private inspectors to confirm that upgrades have been completed. Local governments should consider the pace of rental property sales and renovations if such events are a precondition for compliance, as this may hinder or enable the policy's energy-reducing potential. Finally, local governments should make plans for how to update the policy's energy efficiency measures and any cost caps so they keep pace with emerging technologies and inflation.

Rental efficiency loan or grant program with affordability covenants

Many local governments are providing rental properties with loans or grants that, depending on the program, can be used to fund energy efficiency, renewable energy, structural repair, and health and safety improvement projects. Several localities also require property owners wishing to receive financing to enter into an ***affordability covenant***—that is, an agreement to keep rents affordable for those with low incomes for a specific number of years following a project's completion.[18] This agreement ensures that landlords do not increase rents to pay back loans or to further increase their properties' net operating income. Localities typically structure these agreements as deed restrictions that remain with the property in the event it is sold.[19]

[17] Salt Lake City has similar retrofit requirements for residential housing, including rental properties, that are undergoing certain repairs or a renovation. However, the city does not include cost caps. For more about Salt Lake City's policy, see codelibrary.amlegal.com/codes/saltlakecityut/latest/saltlakecity_ut/0-0-0-61336.

[18] The length of affordability covenants varies depending on program. Federal grant and loan programs typically have affordability covenants that are in effect for 5 to 20 years. The Low Income Housing Tax Credit (LIHTC) program requires at least a 30-year affordability covenant (Elia 2019). Evidence indicates that most local government programs are requiring affordability covenants of 30 years or more (Hickey, Sturtevant, and Thaden 2014). While routinely used by local governments, affordability covenants have been subjected to very little judicial review. For a discussion of potential legal issues surrounding these tools, see digitalrepository.unm.edu/cgi/viewcontent.cgi?article=1779&context=law_facultyscholarship.

[19] Deed restrictions are agreements that limit property uses or activities. These agreements are tied with the land that a building occupies and are enforced on a property, regardless of its owner, until a specified expiration date.

These loan and grant programs are structured based on their funding source. Some local governments, such as Dallas and Phoenix, use the federal government's Community Development Block Grants (CDBG) and HOME loans to fund energy efficiency work as part of overall affordable housing rehabilitation projects.[20] Cities such as Washington, DC, and Milwaukee use taxes and fees to create their own affordable housing financing offers, while Minneapolis and Cincinnati, Ohio use utility company franchise fees and merger settlement funds to incentivize energy-focused retrofit projects while requiring that property owners commit to keeping rents affordable for those with low incomes. While using utility customer funding typically supports only utility energy efficiency programs, using local taxes, fees, utility franchise fees, or merger settlement funds to finance a program allow local governments more flexibility in how they use the funds. For example, such funds can be used to cover any structural, health, and safety improvements that need to be completed in a property before energy efficiency or renewable energy work commences. Minneapolis, profiled below, has demonstrated that localities can use community engagement to more equitably allocate their investments and meet renter needs.

Using Community Engagement to Guide Program Investments

The City of Minneapolis created Green Zones for the renter-dominated Northside and Southside neighborhoods—largely occupied by communities of color and indigenous peoples—with the goal of "improving health and supporting economic development using environmentally conscious efforts in communities that face the cumulative effects of environmental pollution, as well as social, political and economic vulnerability" (Minneapolis 2021b). Northside and Southside Green Zone Councils comprising community members worked together and with other neighborhood residents to develop five-year work plans to guide the city's climate mitigation initiatives and investments in achieving more equitable outcomes. Both work plans include a focus on strengthening community ties and honoring community knowledge and practices. The Southside work plan calls on the city to prioritize emergency preparedness for households and community spaces in its energy planning and to support community-based organizations in doing the same. The Northside work plan includes several recommendations to raise community climate change awareness and spur climate action through existing social networks, art, and podcasts.

Public housing energy-efficient rehab projects with inclusive workforce development

Some local governments are working alongside their public housing authorities (PHAs) to renovate and improve the energy performance of their affordable properties. Across the country, local PHAs are faced with aging properties that are in dire need of renovations. PHAs are typically responsible for paying all property utility costs and have a clear motivation to invest in projects that will reduce those costs. While energy efficiency improvements to these buildings can bring down the high utility costs for PHAs, the cost savings rarely benefit residents directly due to the federal regulatory requirements that these properties operate under. However, some PHAs have found ways for these projects to benefit residents by offering workforce development opportunities and engaging residents in project planning. We profile one such example, from Boston, in the box below.

Creating Meaningful Work

In 2014, the Boston Housing Authority (BHA) completed the largest public housing energy efficiency retrofit project in U.S. history. Ameresco (2020), an energy services company, oversaw the project and shared information regarding the project planning and outcomes in a case study. The project resulted in natural gas and water savings of more than 30% and saved more than $4.8 million in annual utility costs. The project also involved a first-of-its-kind Project Labor Agreement (PLA) between BHA, Ameresco, and local labor unions. This PLA created approximately 600 jobs for local union workers, public housing and low-income city residents, and small and minority-owned businesses. It also established a pre-apprenticeship program that was open to public housing and low-income city residents.

[20] Local governments are eligible for CDBG grant allocations if they are the principal city of a metropolitan statistical area, another metropolitan city with a population of at least 50,000, or are a qualified urban county with a population of at least 200,000 (HUD 2021a). HOME funds are allocated to local governments based on a jurisdiction's housing supply inadequacy, incidence of poverty, fiscal distress, and other factors. HOME also requires that participating jurisdictions match 25 cents for every dollar in federal funds used to support affordable housing. Localities may also qualify for HOME by joining with neighboring jurisdictions in a legally binding consortium or by receiving an allocation from their state (HUD 2021b).

Table 3. Summary of rental energy efficiency initiatives that preserve affordable communities and housing

	Affordable housing energy performance standard compliance assistance	Limited-scope rental property retrofit requirements	Rental efficiency loan/grant program with affordability covenants	Public housing rehab projects with inclusive workforce development
Key partnerships	Local housing department Rental property owners State and utility program managers	Building inspectors Energy assessors Rental property owners State and utility program managers	Local housing department Rental property owners Energy efficiency service providers	Lenders Labor unions and trade groups Renter groups
Critical local government adoption considerations	Expertise and funding for affordable property retrofit technical assistance	Capacity of building inspector or other assessors Process for updating requirements	Project measurement and verification processes Sufficient funding for efficiency	Availability of energy efficiency worker training and career opportunities
Just Transition principles alignment	*Buen Vivir* Build what we need now	*Buen Vivir* Build what we need now	*Buen Vivir* Culture and tradition Solidarity Build what we need now	Meaningful work Self-determination Regenerative ecological economics Solidarity Build what we need now
Best practice resources	"Rental Efficiency+ City Cohort Action Guide" (RMI) Better Rentals, Better City (RMI) Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals (ACEEE) "Mandating Building Efficiency while Preserving Affordable Housing: Opportunities and Challenges" (NHT and ACEEE)	Developing practice	"Clean Energy Financing Tool & Guide" (EPA)	*Through the Local Government Lens: Developing the Energy Efficiency Workforce* (ACEEE)

PRODUCE AFFORDABLE HOUSING: INTEGRATE ENERGY EFFICIENCY AND AFFORDABILITY REQUIREMENTS IN HOUSING DEVELOPMENTS SUPPORTED BY LOCAL GOVERNMENTS

Local governments will need to both preserve existing affordable housing and build new homes to lower the high housing cost burdens faced by many low-income renters. As we have noted, larger multifamily buildings have made up the bulk of new rental property construction projects since 2015 (JCHS 2020). In markets with constrained housing supply, accelerating the pace of any housing construction to meet or exceed renter demand can improve overall housing affordability, but the construction of subsidized affordable housing is likely to have the quickest and most direct impact on low-income housing cost burdens (Rosenthal 2014; Zuk and Chapple 2016; Mast 2019). With this as motivation, local governments are incentivizing affordable housing developers to build new energy-efficient properties. In doing so, they are expanding and bolstering the long-term sustainability of the affordable housing market while meeting the immediate needs of rent- and energy-cost-burdened renters. Table 4, which follows at the end of this section, summarizes factors to consider when pursuing this strategy, its alignment with the Just Transition principles, and resources to consult for further information.

Competitive affordable housing funding efficiency criteria

Local government programs designed to encourage affordable housing construction projects generally integrate energy performance criteria into competitive funding opportunities for affordable housing projects. A few cities have the power to award low-income housing tax credits (LIHTC) to support new affordable housing construction.[21] Cities such as Chicago, New York, and Washington, DC, award LIHTC to affordable housing developers, and all three consider the energy performance of a proposed project when awarding credits (Bartolomei 2016).

Building What We Need Now

The Macedonia Baptist Church in Arlington County, Virginia, was able to partner with AHC, Inc. to construct the Macedonian, a 36-unit affordable apartment building using funding from the Arlington County Affordable Housing Investment Fund. The fund has helped finance most new affordable rental units in the county. The Macedonian contains 30 units with rents that are affordable to households making up to 60% of the area median income and six units are affordable to those earning less than 50% of are median income. Five apartments are reserved for those living with disabilities. The property earned EarthCraft certification, is smoke-free, and includes a partial green roof that saves energy and prevents water runoff (Center for Community Change 2016).

Affordable housing trust funds, created using revenue from local taxes and fees, serve as another competitive source of affordable housing construction funding. This funding is often used to fill gaps in funding for an affordable housing project (T. Nedwick, senior director of sustainability policy, National Housing Trust, pers. comm., April 26, 2021). As of 2016, 715 city and county governments had affordable housing trust funds (Center for Community Change 2016). More than half of city housing trust funds and roughly a quarter of county funds could be used for new construction projects. Some of these cities and counties also include requirements or preferences for projects to meet energy efficiency targets above those of existing energy codes. For example, Arlington County, Virginia, requires that developers receiving funds meet one of several green building certifications. Those that commit to ongoing benchmarking, audits, or resident efficiency education, or to installing a rooftop solar system, receive preference under the fund's competitive criteria and are eligible for other county incentives (Center for Community Change 2016).

While all competitive energy-efficient affordable housing funding programs require subsidized affordable housing to build to more stringent standards than existing building energy codes, some local governments are increasingly interested in building to net-zero energy standards. Those looking for guidance on creating ultra-low-energy design standards for affordable housing can look to Boston for an example. In 2020, Boston took the step of requiring that all affordable housing new construction projects receiving any type of city funds conform to its zero-emissions building standards (Boston 2020).[22]

Table 4. Summary of housing initiatives that produce new energy-efficient affordable rental housing

	Competitive affordable housing funding efficiency criteria
Key partnerships	Local housing department Affordable housing providers
Critical local government adoption considerations	Existence of affordable housing trust or another dedicated fund Authorization to use affordable housing funding for new construction
Just Transition principles alignment	Resource and power redistribution Regenerative ecological economics Build what we need now
Best practice resources	*Energy Efficiency in Affordable Housing* (EPA)

[21] While this section of the report focuses on new affordable housing construction, LIHTC can also be used to support the preservation of existing affordable housing.

[22] These design standards can be found at content.boston.gov/sites/default/files/file/2020/09/DND%20Design%20Standards.pdf.

Formalize and Maintain Rental Efficiency Partnerships to Implement Multiple Initiatives: Lessons from Local Case Studies

In this section, we profile four cities' rental energy efficiency policy and programs. Our case studies include a look at one rental efficiency mandate and five rental efficiency incentive and financing programs. We review each city's policies or programs, discuss their intended goals, describe each city's approach to engaging with the community, detail any documented outcomes, and highlight lessons learned. All four cities profiled here experience a similar cold climate (Baechler et al. 2010). However, they differ markedly in population size. Both Boulder and Fort Collins, Colorado, are smaller Mountain West college towns with populations of less than 200,000 people, while Minneapolis and Milwaukee are Midwestern cities with more than 450,000 residents (Census Bureau 2021b). Later in this section, we compare the approaches of the four cities and discuss their implications for other local governments. The information we present in this section supports the following findings:

- Building and maintaining partnerships both within the government and with the local community is critical to improving rental property energy efficiency and preserving affordable housing.
- Creating multiple initiatives may be needed to adequately address the needs of the rental sector.
- Acquiring external funding from philanthropies and other local, state, or federal government sources is helpful in developing rental efficiency programs.
- Forming dedicated energy efficiency funding sources can help to sustain rental efficiency programs over many years.
- Reaching many rental homes and achieving deep energy savings may require substantial spending from one or more programs.
- Achieving high low-income renter participation is more likely for programs specifically designed with this goal in mind.
- Conducting continual community engagement while implementing initiatives may increase landlord participation and better address the many issues that renters face over time.

BOULDER SMARTREGS AND ENERGYSMART

Policy overview and goals

In 2010, the City of Boulder adopted its SmartRegs policy, requiring that all long-term rental property owners meet an energy efficiency standard by 2019 to maintain their rental licenses. The city already had a rental licensing program in place, making it easier to implement energy efficiency requirements for these properties. The policy was primarily adopted to help ensure the city met its Climate Action Plan (CAP) goals of reducing GHG emissions. SmartRegs targets energy reductions in rental properties because 76% of the city's emissions are attributable to buildings, and 53% of residential properties are rental housing. The policy was also adopted to ensure that rental properties met a baseline efficiency level, that energy use declined for both landlords and renters, and that those owning and renting these properties learned more about energy-saving measures and practices. In the years following adoption, the policy succeeded in overcoming the split incentive barrier to energy efficiency in these properties, which can often stand in the way of reducing LMI renters' energy burdens (Vasatka 2020).

Petersen and Lalit (2018) describe the policy's compliance process. Boulder landlords can comply using a prescriptive path, a performance path, or one of several exemptions. The ***prescriptive path*** includes undertaking a series of efficiency-improving measures from a city-created checklist. Each action is worth a predetermined number of points.[23] Inspectors evaluate which of these actions have been completed and whether the property achieves a score equal to or greater than 100, which is the minimum to be considered compliant. Compliance under the prescriptive path is the equivalent of meeting the 1999 International Energy Conservation Code (IECC). Properties may also comply using a ***performance path,*** whereby a home energy rater assesses a property using the Home Energy Rating System (HERS). With this path, a property must achieve a score of 120 or less to comply. Finally, the city provides exemptions for mobile homes, previously weatherized homes, properties constructed after 2001, or properties for which efficiency upgrades are technically infeasible.[24] Between 2010 and 2018, property owners overwhelmingly pursued the prescriptive path, with 98% of those not already in compliance using this option. During the compliance period, prospective renters could see whether a rental property was compliant with SmartRegs using an online map (Boulder 2021).

Public outreach, stakeholder engagement, and community engagement

City council members, department staff, and a stakeholder advisory group were the lead actors in developing, adopting, and modifying the SmartRegs policy. However, community members also played a role in the policy development process. SmartRegs was developed using staff-directed research, stakeholder engagement, and public outreach. Boulder hired two consulting firms to conduct case study research of the policy's potential impact on property energy use and landlord finances (Neiger et al. 2010). These case studies proved especially helpful in informing the public outreach conducted through public forums and one-on-one conversations with stakeholders. University of Colorado Boulder student renters also spoke in support of the policy at city council public hearings (E. Vasatka, sustainability coordinator, City of Boulder, pers. comm., April 26, 2021). The city's stakeholder engagement included the Boulder Area Rental Housing Association (BAHRA), energy efficiency professionals, Xcel Energy, Boulder County, and Boulder Housing Authority (Petersen and Lalit 2018; Vasatka 2020). BARHA is a membership-based organization that represents rental property owners and serves as a voice, resource, and forum for discussion among Boulder landlords. BARHA members' participation in the city's stakeholder engagement process had a direct effect on the development of the SmartRegs compliance timeline and pathways, as well as on the city's work to develop incentives, financing, and technical assistance to support landlord compliance (Petersen and Lalit 2018).

The City of Boulder worked to connect landlords with energy efficiency incentives provided by Xcel Energy, the local investor-owned utility. It also partnered with Boulder County to develop the EnergySmart program using a $12 million grant from the DOE. Through the program, energy advisors helped landlords make decisions about efficiency upgrades, apply for available incentives, and navigate and evaluate contractor bids (Arena and Vijayakumar 2012). The program offered property owners no-cost direct quick installs of high-efficiency light bulbs, shower heads, faucet aerators, weather stripping, and programmable thermostats (Boulder 2019). Boulder County also worked with Elevations Credit Union to offer a loan that underwrites energy savings, and created a loan loss reserve to back this offering (Petersen and Lalit 2018). In the first three years after SmartRegs adoption, the city offered a wider array of one-on-one services and incentives; however,

[23] In addition to energy efficiency actions, each property must score two mandatory points in a water conservation category. For the complete checklist, see static.bouldercolorado.gov/docs/prescriptive-path-checklist-1-201305231559.pdf?_ga=2.268088718.1277450356.1619474951-1707934764.1605722936.

[24] Properties constructed after 2001 were required to comply with the 1999 IECC or a more stringent energy code.

both incentives and one-on-one services were gradually scaled back as the 2019 compliance deadline approached. Today, property owners have online access to supportive resources, and the city is more focused on ensuring compliance of all licensed rentals. Furthermore, each property that applies for a new rental license must demonstrate SmartRegs compliance inspection when they apply for their rental license (Vasatka 2020).

Policy and program spending and savings

By the end of 2019, 99% of Boulder's 22,718 rental units were compliant with SmartRegs (Boulder 2020). Data collected at the end of the compliance deadline for existing rental properties revealed that 50% of the city's rental units achieved compliance by demonstrating that they had already met the city's energy baseline and 17% achieved compliance using one of the policy exemptions. Another 32% of rental properties pursued upgrades to achieve compliance, with roughly two-thirds of them participating in the EnergySmart program to reach compliance (Boulder 2019). On average, the noncompliant properties had to complete two efficiency upgrades to achieve compliance, at an average cost of $3,022 per property; the most common upgrades were attic insulation, crawlspace insulation, and wall insulation (Boulder 2019).

EnergySmart program performance data for Boulder's SmartRegs participants reveal that 1,536 received rebates averaging $579, along with available no-cost quick install energy efficiency measures to reach compliance.[25] Rebates totaling $889,571 were used to leverage substantial private investment for upgrades. Every $1 in efficiency rebates was leveraged with $8.05 in private investment, such as loans or private equity. As of 2018, the city of Boulder had spent an average of $350,000 per year to support the program since its launch in 2011. Until 2017, the city's CAP tax funded the program. Beginning in 2017, 60% of city funding for the program came from SmartRegs property owner noncompliance fees, with the remaining 40% coming from the CAP tax (Boulder 2018). Taken together, EnergySmart's quick installs and rebates were able to achieve 1,935,554 kWh and 459,253 therms of deemed first-year energy savings for those who used the program to comply with SmartRegs. The program is also responsible for total annual GHG emissions reductions of 3,917 $mtCO_2$ and at least $519,625 in energy cost savings.[26] In terms of GHG emission reductions, the program has been able to achieve the equivalent of removing 928 cars from the road per year.

Success factors, alignment with the 3P goals, and lessons learned

City of Boulder staff members said that receiving the initial $12 million DOE grant was critical in achieving near universal compliance with SmartRegs. It allowed them to offer property owners robust technical assistance and free or incentivized energy efficiency upgrades through the EnergySmart program that the City would not have been able to offer otherwise. Affordable housing providers were given priority consideration for inspections assistance and energy efficiency rebates. Boulder also provided landlords with a lengthy compliance period of eight years and two compliance pathways to meet the new standards. This flexible approach to compliance and the accompanying EnergySmart program advisor assistance and financial incentives align with several of the actions that Nedwick and Ross (2020) recommend local governments should take to support affordable rental housing properties' compliance with an energy standard. These actions can contribute to the 3P goal of preserving community and housing affordability. In hindsight, city staff members stated that, ideally, they would have scheduled specific times to review and adjust the prescriptive compliance check list measures to better reflect changing technology and climate action priorities, such as electrification.

FORT COLLINS EPIC HOMES PROGRAM

Program overview and goals

The Epic Homes energy efficiency and renewable energy program is jointly administered by Fort Collins Utilities and the Platte River Power Authority in Colorado. Fort Collins Utilities is a municipal utility for the City of Fort Collins, while Platte River Power Authority is a regional community-owned public electricity cooperative. The Epic Homes program is designed to provide owner and renter-occupied single-family homeowners with several services that reduce barriers to completing energy efficiency and indoor environmental quality projects.[27]

Property owners first sign up for an in-home energy assessment. All assessments provide participants with Home Energy Scores (HES) and identify opportunities to make energy-saving and indoor air quality upgrades. Assessors also provide

[25] The property count was obtained by dividing total rebate amounts by average issued rebate amount. An unknown number of properties with 1,375 units received only quick install measures.

[26] The data shared here reflect EnergySmart's performance in the City of Boulder, but all properties in Boulder County were eligible to participate in the program. This website shares complete data for the entire program.

[27] Renters are unable to directly participate in the program without a landlord's permission.

energy- and water-saving devices at no cost while on site. All customers can take advantage of on-bill financing to cover the upfront cost of all project measures that qualify for a rebate (Fort Collins 2021).[28] Participants may also participate in an indoor environmental quality study that examines the links between home energy efficiency and the health and well-being of occupants. The study is conducted by researchers at Colorado State University (CSU), a program partner. In the summer of 2021, this CSU research team will also conduct a rigorous analysis of the factors that enable or hinder participation in Epic Homes, with a specific focus on rental property owners.

Property owners' experience of participating in the program also varies based on the type of in-home energy assessment they receive. Participants can sign up for one of three in-home energy assessment options: streamlined, home check-up, or home performance. If customers choose a ***streamlined*** assessment, the recommended measures will be grouped into ***good***, ***better***, and ***best*** energy performance packages using standard envelope pricing.[29] Customers are shown each package and measure's monthly costs if they elect to use Fort Collins Utilities' Epic Loan on-bill financing. The contractor applies available rebates upfront for all qualifying measures to reduce the amount that property owners must pay upfront or finance to complete their retrofit projects. ***Home checkups*** are abbreviated assessments designed for customers who are not sure if they are going to complete a project, prefer a do-it-yourself approach, or would just like to understand how their home is performing. Advisors are available to help solicit and review participating contractor proposals for all measure types if customers decide to move forward with a project. The ***home performance*** option is available for property owners who are drawn to the program through a home energy performance contractor rather than the program's administrators. The company connects its customers with the Epic Homes program to take advantage of its incentives, on-bill financing, and other services.[30]

As Carpenter and DeVoe (2020) describe, in 2009, Fort Collins Utilities created the Home Efficiency program—which eventually evolved into Epic Homes—with the primary goals of reducing energy use and establishing highly credible, building-science-based standards to improve residents' satisfaction with energy retrofits. The city believes that the program offers residents and the community many nonenergy benefits and can help accomplish several of its overarching social and environmental health strategic objectives, economic health goals, and city council priorities. These include the following:

- Achieving benefits for low-income residents including improved social health
- Furthering equity and inclusion
- Improving air quality
- Supporting the development of new and enhanced financing tools
- Encouraging Fort Collins residents to support local businesses

While the program has never excluded rental properties, it was redesigned in 2019 to target these homes for participation because approximately half of the city's households and more than 90% percent of the city's LMI households are renters.

Public outreach, stakeholder engagement, and community engagement

Those responsible for developing and implementing the Epic Homes program have conducted substantial stakeholder engagement and some limited community engagement with low-income renters (C. Conant, energy services project manager, City of Fort Collins Utilities, pers. comm., January 27–28, 2021). Stakeholders that have informed the program's design and operation include local energy advisors, energy efficiency program implementation firms, government organizations, real estate professionals, university researchers, installation contractors, energy consultants, and professional organizations focused on building science and utility program administration. Communication with these stakeholders currently occurs through semiannual roundtable discussions with trade partners and frequent meetings with energy advisors and Platte River Power Authority administration and implementation partners to discuss potential improvements. In developing the program to better serve rental properties, staff conducted initial customer outreach at food banks with the thought that renters who face difficulties affording rent and utility bills would be likely to seek out assistance there. Staff members spoke with renters, who shared their lived experiences with unhealthy and substandard homes (Carpenter and DeVoe 2020).

---

[28] On-bill financing can take several forms and allows utility customers to pay back the cost of energy efficiency upgrades through a charge on their utility bill. For more information, see aceee.org/toolkit/2020/02/bill-energy-efficiency.

[29] The criteria that determine ***good, better,*** and ***best*** packages are variable and specific to each property and the customer's goals. A ***good*** package includes the minimum measures that a customer should install to achieve a basic level of home energy efficiency, health, safety, and comfort. The ***better*** package adds to the ***good*** package with more costly and/or complex measures such as wall drill-and-fill insulation, proactive HVAC upgrades for equipment over 15 years old, and removal and/or replacement of old whole-house fans. The ***best*** package will include all of the above plus more-expensive measures with a lower return on investment, such as window replacements and deep energy retrofits.

[30] In all options except ***home performance***, the project contract is always between the customer and the contractor. The utility is simply a "referring agency" to the contractor to receive proposals for projects; it is not the general contractor.

In the summer of 2021, the program's CSU research partners will be conducting further outreach with renters and rental property owners to better understand the factors that affect their participation in the program, as well as the impact of retrofits on renter energy bills (C. Conant, energy services project manager, City of Fort Collins Utilities, pers. comm., April 23, 2021).

Staff members have recruited landlords to the program using different public outreach methods (Carpenter and DeVoe 2020), including property manager information sessions, direct mail, and media promotions. In their communication with landlords, staff members highlight that participants receive Epic Homes completion certificates at the end of projects. These certificates include HES that assess a home's energy performance on a scale of 1–10, with 10 indicating that a home is among the most efficient and 1 indicating that it is among the least efficient.[31] Administrators hope that these certificates will act as both branding for the program and signify to the broader rental market that certified homes provide renters with lower energy costs and improved indoor air quality and comfort, resulting in potential positive health and well-being outcomes. Such branding is designed to create market demand among renters for certified units and apply market pressure to landlords not participating in the program to remain competitive by upgrading their units.

Program spending and savings

Epic Homes funding, apart from its financing capital, comes from an ongoing allocation of customer bill revenue (C. Conant, energy services project manager, City of Fort Collins Utilities, pers. comm., January 27–28, 2021). During the 2019–2020 Bloomberg Philanthropies Mayors Challenge project, the program used grant funds to cover additional project management, marketing, and loan administration costs. Epic Homes used $782,000 of a $1 million grant to help capitalize the Epic Loan fund and support the program's shift to a focus on renters. Program administrators expect annual administration and incentives costs to total approximately $900,000. In addition to incentives, which amounted to $315,000 in 2019, these funds cover the cost of two full-time staff members, partial funding for an additional four staff members who contribute a substantial amount of time to the program, loan administration contractors, energy advisors who perform home assessments, and a portion of an accounting representative's time. This work is complemented by two Platte River Power Authority staff members (who also administer other home efficiency programs) and a Colorado State University researcher and graduate assistants. Ongoing funding for the program will be sourced from customer bill revenue and interest earned from customer-issued on-bill Epic Loans.

As table 5 shows, Epic Home on-bill financing is made possible by various public, private, and philanthropic sources of capital.

Table 5. Epic Homes on-bill loan capital sources (Carpenter and DeVoe 2020)

Capital type	Provider	Term	Rate	Amount
Internal and grant				
	Previously authorized Light and Power reserves	Ongoing	0%	$1,600,000
	Bloomberg Philanthropies	Grant	0%	$688,350
	Colorado Energy Office – Grant	Grant	0%	$200,000
	Internal subtotal			**$2,488,350**
External market				
	Colorado Energy Office – Loan	15 year	0%	800,000
	U.S. Bank	5 and 10 year	76% of Prime	Up to $2,500,000
	Vectra Bank Colorado	15 year	10-year U.S. Treasury + 2.75%	Up to $2,500,000
	External subtotal			**$5,800,000**
Total				**$8,288,350**

[31] For more on DOE's Home Energy Score, see energy.gov/eere/buildings/downloads/home-energy-score.

Since 2013, the Epic Homes on-bill financing has issued $3.4 million in loans, with an average home loan amount of $12,100.

Using its combination of loans, incentives, and no-cost direct installs, the program served 1,057 homes in 2019 and 2020, including 50 rental properties and 18 LMI rental properties.[32] The average Epic Certificate HES score for upgraded homes has been 7.6 out of a possible 10—considerably higher than the average pre-retrofit score of 2.3 pre-retrofit score average for participating homes. Overall, the program has claimed total first-year energy savings of roughly 980,000 kWh and 13,454 therms over two years. This translates to annual energy savings of 782 kWh and 84 therms per home, or approximately 10% of total home energy use.[33,34]

Success factors, alignment with the 3P goals, and lessons learned

Fort Collins credits a sharp focus on quality and a flexible, iterative planning approach to establishing and optimizing Epic Homes as reasons for its success. Rather than attempt to perfectly plan a full program, staff used manageable, quick piloting to test new approaches, including serving rental properties. Part of this piloting included the stakeholder and community engagement mentioned above. This ensured that any new offering or approach would be welcomed by both landlords and renters.

Fort Collins was also in an advantageous position because it chose to expand an existing municipal utility program to better serve rental customers. Program administrators conducted a Neighborhoods pilot in 2015 and 2016 that tested streamlining their entire home efficiency project process. The pilot first sought to increase enrollment by targeting neighborhoods based on their propensity to participate, which was derived from household demographics aggregated by each of the city's neighborhoods. Using community-based social marketing, enrollment increased by more than 50%.[35] The pilot tested ways to overcome the three primary barriers to project completion: limits on customer time, customer confusion over multiple energy measure recommendations, and customers' lack of necessary upfront capital. The streamlined path overcame these barriers, with increased numbers of more comprehensive projects and savings. This new streamlined path was so successful that it was also adopted by the Platte River's Efficiency Works Homes Program administration.

While not the program's sole focus, staff members are working to recruit rental properties that are affordable to those with LMI and to encourage those properties to promote their participation using the Epic Homes performance certificates. In doing so, program administrators are working to further the 3P goals of protecting tenants through the Epic Certificate's HES labeling and preserving community and housing affordability through their affordable housing recruitment strategies and incentives.

MILWAUKEE TARGETED INVESTMENT NEIGHBORHOOD AND CITY FORECLOSURE RENTAL REHABILITATION LOAN PROGRAMS

Program overview and goals

Milwaukee's Department of City Development offers two property rehabilitation loan programs that can be used to fund energy efficiency improvements in rental homes. The first is the city's long-standing Rental Rehabilitation Loan Program for Targeted Investment Neighborhoods (TINs). TINs are neighborhoods of 6–12 blocks that have pressing needs "to sustain and increase owner-occupancy, provide high quality affordable rental housing, strengthen property values, and improve the physical appearance and quality of life of neighborhoods" (Milwaukee 2020). The program was developed to steer the city's federal HOME funding allocation toward one- to four-unit rental properties that are affordable to those with low incomes, and it prioritizes rehabilitation of units with at least two bedrooms. Landlords are eligible for forgivable loans with zero interest worth up to $14,999 per unit, provided they can secure an equivalent funding match from other sources. To qualify, landlords must be current on all property taxes to the city, have completed the city's landlord training

[32] Counts of LMI households are based on tallies of customers served within LMI census block groups. These counts are not based on actual household income data collected from participants; however, Fort Collins Utilities is currently preparing to administer a demographic survey to all rental homes that have participated to gather more accurate counts.

[33] These calculations are made using deemed energy savings to remain consistent with other reported energy savings across this report. Realized energy savings for the Epic Homes program were lower than deemed savings. Per-unit realized electricity savings were reported as 473 kWh for 2019 and 528 kWh in 2020. Per-unit realized natural gas savings were reported as 47 therms for 2019 and 65 therms in 2020.

[34] Energy savings data were collected through personal communications with C. Conant, energy services project manager, City of Fort Collins Utilities, January 27–28, 2021.

[35] For more information about how Fort Collins Utilities used this approach, see energy.gov/eere/better-buildings-residential-network/downloads/case-study-community-based-social-marketing-fort. Community-based social marketing is "a data-driven approach to changing behavior that uses social influences to reduce barriers and increase motivations for action" (Ross Strategic 2017).

program, commit to maintaining affordable rents for low-income residents, and be in a city-designated TIN. Loans can be used to fund exterior repairs, lead paint abatement, energy conservation, and any needed plumbing, electrical, and heating work. Kitchen and bath improvements are also possible. Financing recipients are required to complete upgrades to energy-efficient windows, furnaces, boilers, and water heaters, and add insulation if existing insulation is damaged or missing. When a property owner applies for a loan, the city performs an initial property inspection and identifies its rehabilitation needs. A rehab specialist will then work with the owner to develop a scope of work and assist with soliciting contract bids. The rehab specialist will then conduct periodic inspections during the project work and upon project completion. The property is subject to further inspections in the ensuing five years (Milwaukee 2020).

In 2013, Milwaukee created a second, similar rental rehabilitation loan program to encourage landlords to purchase and renovate city-owned tax foreclosed properties. This city-funded program is nearly identical to the HOME-funded program, except that it is open to the entire city rather than only to TINs. To qualify, landlords must demonstrate a history of successfully owning and managing properties (Milwaukee 2017).

Public outreach, stakeholder engagement, and community engagement

Because the HOME-funded Rental Rehabilitation Loan Program has existed for several decades, current city staff are unaware of the public and local stakeholders' roles in the program's development. The city-funded program was largely developed by city government staff informed by some consultation with community-based organizations (CBOs), small neighborhood property developers, and lenders.

Milwaukee's Department of City Development maintains regular communication with neighborhood associations, vocal residents, community development corporations, local businesses, and churches as they implement programs. The department also often meets with lenders to discuss how the city's programs can complement their offerings. Staff members organize quarterly meetings with these groups to get feedback on the department's initiatives, listen to their housing concerns, and address housing code compliance issues. These groups offered considerable help in building relationships between the city and neighborhood landlords and steering other city services—including housing code enforcement and an educational program on renter rights—to address renter's housing needs. These groups also have some ability to direct funding to their neighborhoods, as TINs are selected based on applications from CBOs. In addition to the rental rehabilitation loan program, TINs are eligible for home purchase down-payment assistance grants and two loan programs targeted for owner-occupiers (Milwaukee 2020). Neighborhoods can be TINs for a period of three years and cycle in and out of consideration for this status.

Program spending and savings

In a typical year, Milwaukee's Neighborhood Improvement Development Corporation (NIDC) spends $1,400,000–1,800,000 on five housing affordability programs. Of this total, NIDC receives an annual HOME funding allocation of $500,000–600,000 to be used on its rental and owner-occupied home rehabilitation programs for low-income residents. The number and scope of applications determine each program's spending. Additionally, NIDC may receive an influx of funding in certain years from the city's tax-increment financing (TIF) districts.[36] When one of the city's TIFs expires, the city may request state officials to extend it for one additional year to fund affordable housing projects. Depending on the year, additional funds may be allocated from the annual city budget. From 2015 to 2020, the HOME-funded rental program spent roughly $360,000 on 38 rental units while the city-funded rental program spent approximately $700,000 on 52 units during the same time period. Participating rental properties for both programs were almost entirely single-family homes or duplexes.

NIDC has not tracked project energy savings on properties in the rental programs, but it does require that participating properties complete upgrades to energy-efficient windows, furnaces, boilers, and water heaters, and add insulation if existing insulation is damaged or missing. Additionally, NIDC does not underwrite expected energy cost savings from efficiency upgrades in determining its loans, and many rental property applicants cannot justify the added cost of making these improvements given their often-limited resources, access to financing, and property valuation.

[36] Many local governments establish tax-increment financing (TIF) districts to spur real estate development and investment an underinvested area. A jurisdiction will issue bonds or their own funds to pay for infrastructure investments and other amenities. The initial bond investment is paid back using incremental property tax receipts from the increase in development (NYU Furman Center and Abt Associates 2021).

Success factors, alignment with the 3P goals, and lessons learned

Milwaukee was able to expand its rental rehabilitation offerings to those purchasing city-owned foreclosed properties because its HOME-funded program had proven effective over many years and was judged to have high standards by neighborhood groups and various other stakeholders. However, both programs are small and cannot serve many rental homes. The city has prioritized stabilizing and growing the number of low-income homeowners across the city with its limited affordable housing funding. Thus, funding for rental property retrofit and rehabilitation projects is likely to remain limited for at least the near future. Most landlords of the city's affordable rental properties will need to look elsewhere for funding or financing for rehabilitation and energy efficiency improvements. The programs' small scale also means that it is difficult to justify an in-depth evaluation of its design, implementation, and outcomes.

While these programs are small, they are entirely focused on the 3P goal of preserving community and housing affordability. The City of Milwaukee's complementary renter rights education program also furthers the aim of protecting tenant rights.

MINNEAPOLIS 4D AFFORDABLE HOUSING INCENTIVE AND GREEN COST SHARE 4D ENERGY EFFICIENCY PROGRAMS

Program overview and goals

In Minneapolis, elected officials and government staff have worked closely together to create the 4d Affordable Housing Incentive program that helps owners of unregulated affordable housing qualify for the State of Minnesota's 4d property class tax abatement. The city's program participant guide lays out the initiative's eligibility requirements and benefits for participating landlords (Minneapolis 2021a). Property owners receive a tax reduction in exchange for committing to keep at least 20% of their property's units affordable to those with low incomes. Program participants also receive priority consideration for energy efficiency and renewable energy incentives under the city's Green Cost Share 4d Energy Efficiency program.

Market-rate rental properties can qualify for the 4d Affordable Housing Incentive program if at least 20% of units have rents that are affordable to households earning at or below 60% of area median income (AMI) and owners are willing to commit to keeping those rents affordable for a 10-year period. The City of Minneapolis will help these qualifying property owners apply for the state's 4d property tax rate which provides a roughly 40% tax rate reduction for qualifying units for a 10-year period. It will also provide a grant of $100 per affordable unit, up to $1,000 per property. Once a property joins the city's 4d Affordable Housing Incentive program it becomes eligible for Green Cost Share 4d Energy Efficiency program incentives. Properties wishing to take advantage of 4d Energy Efficiency program incentives can become eligible for funding of up to $50,000 per building after first applying for available utility energy efficiency program incentives. Incentives are calculated so that the utility and city matches combine to equal 90% of total project costs.[37]

The 4d Affordable Housing Incentive program's primary purpose is to, "preserve affordability, reduce energy use, and enhance healthy homes to support tenants and strengthen the bottom line for property owners" (Minneapolis 2021a). The program has a secondary goal of supporting market-rate new construction affordable housing projects. The Green Cost Share 4d Energy Efficiency program was created as part of the Minneapolis Clean Energy Partnership (CEP), which directs utility franchise fees to achieve the city's energy and climate mitigation goals with a focus on achieving equitable outcomes for the city's marginalized communities (Ross and Samarripas 2020). The 4d Energy Efficiency program was created to help spur interest in maintaining affordable units through the city's 4d affordable housing program. The program attempts to address the split incentive between owners and renters to pursue energy efficiency upgrades. At the program's inception, split incentive challenges had kept many multifamily properties from enrolling in the local utilities' Multifamily Building Energy Efficiency program. While the 4d Energy Efficiency Program does address this split incentive and leads to more investment in low-income multifamily buildings, the program does not directly track renter cost savings due to confidentiality constraints on accessing customer utility bill data.

Public outreach, stakeholder engagement, and community engagement

Development of the 4d Affordable Housing Incentive program was primarily led by city staff in the Community Planning and Economic Development Department (CPED), the City of Minneapolis Mayor's Office, and members of the city's

[37] New construction projects with at least 20% of units reserved as affordable can receive up to a $100,000 city-provided incentive if they are also pursuing ENERGY STAR, Zero Energy Ready, or Passive House Institute US (PHIUS) certification. However, no new construction project has yet to take advantage of this offer as of the writing of this report.

Housing Policy and Development Committee (Minneapolis 2018a). Those responsible for developing the initiative conducted some public outreach and shared the comments they received with the city council (Minneapolis 2018b). The Green Cost Share 4d Energy Efficiency program is administered by the city's health department, which works closely with other city departments, neighborhood organizations, and the CEP's advisory board (McCoy 2021). Some of the external organizations that 4d Energy Efficiency staff work with directly represent and serve renters and the city's historically marginalized neighborhoods. Others are private companies and national nonprofit organizations or their local chapters.

A combination of interdepartmental and external stakeholder interests motivated city staff to combine Green Cost Share offers with the 4d Affordable Housing Incentive program. When Green Cost Share initially launched, the city was offering a 20% incentive match to local utility energy efficiency program offers to encourage property owners to pursue deeper energy-saving measures than those the utilities offered at no cost (including efficient light bulbs, faucet aerators, and low-flow showerheads). This offer received very little interest from rental property owners, but program staff were presented with an opportunity to combine their offers with those of the 4d Affordable Housing Incentive program to increase participation. When the 4d Affordable Housing Incentive program launched, CPED staff reached out across city government to see if other municipal programs could be integrated into a package of offers for prospective 4d applicants. Staff were motivated to offer 4d applicants as many incentives and services as possible to ensure high participation. In addition to providing rental property owners with a more robust package of incentives, Green Cost Share staff were also able to leverage CPED's long-standing relationship with a local rental property owners group to better promote the 4d Energy Efficiency program.[38] At the same time, Green Cost Share 4d Energy Efficiency program staff members also revised their incentive structure so that participants received a total utility and city incentive worth up to 90% of energy efficiency upgrade costs.

As we noted earlier, local utility energy efficiency program incentives are an essential element of the 4d Energy Efficiency program. City staff work very closely with the Center for Energy and Environment (CEE) to implement the program. CEE is a nonprofit organization focused on clean energy that conducts technology and market research, implements energy efficiency programs, provides building engineering technical assistance, offers energy efficiency financing, conducts workforce training, and works to advance clean energy policies at multiple government levels (CEE 2021). CEE staff members perform energy audits and help guide applicants through both the search for contractors and the utility rebate application process. They also help Green Cost Share applicants address any property health and safety repairs (typically knob and tube wiring remediation and improved ventilation) that must be carried out before any energy efficiency work can begin. Currently, the city, CEE, and local utilities are also exploring the possibility of partnering to offer energy efficiency workforce development training. The city currently partners with Summit Academy OIC, a local vocational school, to offer a solar installation course focused on training students of color and low-income students.

Program spending and savings

4d Affordable Housing Incentive and Green Cost Share 4d Energy Efficiency staff provide the Minneapolis City Council with annual updates on program performance. Between mid-2018 and mid-2020, Minneapolis (2020a) reported that the 4d Affordable Housing Incentive program had enrolled 256 properties with an average of 7 units per property. Of these properties, 88% of the units have rents that are affordable to those earning less than 50% of the area median income. Forty-nine properties—with a total of 199 affordable units—that have enrolled in the 4d Affordable Housing Incentive program have also pursued energy efficiency projects with support from the Green Cost Share 4d Energy Efficiency program. These projects cost $1.1 million and saved 131,403 kWh and 50,162 therms. Three 4d Energy Efficiency properties also chose to pursue solar projects through Green Cost Share, generating 68 kW. While solar uptake has been limited, program administrators are planning to focus on expanding this program element soon. The annual budgets for the 4d Affordable Housing Incentive and the Green Cost Share 4d Energy Efficiency programs each totaled $250,000 in 2019 and 2020 (Minneapolis 2019, 2020b). However, the 4d Energy Efficiency program's annual spending has typically been higher than its annual budget because the program can use funding from other city funding sources (I. Evans, public health specialist, city of Minneapolis, pers. comm., April 26, 2021).

Success factors, alignment with the 3P goals, and lessons learned

The 4d Affordable Housing Incentive program was made possible because a state 4d property exemption already existed. This city program helps drive increased use of the state program and assists eligible property owners with navigating the

[38] The 4d Energy Efficiency program's partnership with CPED is unique compared to other Green Cost Share programs. This partnership has allowed Green Cost Share staff to appeal directly to building owners. Other Green Cost Share programs have worked with the city's Green Zones to target funding and conduct outreach.

application process. Similarly, the Green Cost Share 4d Energy Efficiency program was made possible because of a separate negotiation between the city and its investor-owned utilities. A renegotiation of the city's franchise agreements with these utilities included the mayor and city council setting aside a portion of franchise fee funding to assist the city's low-income residents and communities of color. This program has also led to greater cooperation between the city and utility program administrators.

Moving forward, city staff members are hoping to better leverage their partners' investments in projects. The city's portion of project costs has been increasing as it works to reach rental properties that are not typical participants in utility energy efficiency programs. City staff members are optimistic that they can work with their utility partners to secure a higher utility funding match, which can be used to complete more projects in these predominately low-income housing units. The city is also considering ways to increase investment from other partners, including property owners. When asked about their advice for other local governments, 4d Energy Efficiency staff members stated that they would recommend spending time meeting with building owners. Landlords have appreciated that city staff have been willing to take the time to listen to and understand the challenges they face. As we noted above, the program's partnership with CEE has also been essential for effective Green Cost Share implementation.

While the 4d Affordable Housing Incentive and Green Cost Share 4d Energy Efficiency programs primarily align with the 3P goal of preserving community and housing affordability, they do have a secondary goal of encouraging the construction of new energy-efficient affordable rental housing—although, so far, this has received limited interest from affordable housing providers. These programs hold the potential to align with the 3P goal of producing housing that is affordable for low-income households and is also environmentally sustainable.

CASE STUDY TRENDS

Our four case studies exhibit differences as well as commonalities. In table 6, we compare their overall approaches, while tables 7 and 8 offer a detailed look at the spending and performance outcomes of our case studies' incentive and financing programs.

Table 6. Rental energy efficiency policy and program case study comparisons

City	Rental efficiency initiatives	Energy efficiency policy levers	Alignment with the 3Ps	Engagement approach
Boulder	SmartRegs EnergySmart	Licensing requirement No-cost direct install offer Incentives	Preserving affordable communities and housing	Public outreach Stakeholder engagement
Fort Collins	Epic Homes	No-cost direct install offer Incentives On-bill financing Performance labeling	Protecting tenants Preserving affordable communities and housing	Public outreach Stakeholder engagement Community engagement
Milwaukee	Rental Rehabilitation Loan Program (HOME)	Low-interest financing Renter rights education	Protecting tenants Preserving affordable communities and housing	Stakeholder engagement Community engagement
	Rental Rehabilitation Loan Program (city funded)	Low-interest financing Renter rights education	Protecting tenants Preserving affordable communities and housing	Stakeholder engagement Community engagement
Minneapolis	4d Affordable Housing Incentive Program Green Cost Share	Property tax abatement Incentives	Preserving affordable communities and housing Producing affordable housing	Public outreach Stakeholder engagement

Table 7. Rental energy efficiency case study program average annual spending and outcomes

City	Rental efficiency initiatives	Data years	Annual city program budget	Avg annual program incentive costs	Avg annual properties served	Avg annual dwelling units served	Avg annual program spending per unit	Avg annual program kWh savings	Avg annual program therm savings	Avg annual kWh savings per unit	Avg annual therm savings per unit	Avg annual MMBtu savings per unit
Boulder	EnergySmart*	2011–2018	$350,000	$111,196	N/A	561	$579	241,944	57,607	432	102	11.7
Fort Collins	Epic Homes**	2019–2020	$708,894	$323,405	529	529	$611	490,000	N/A	926	N/A	3.2
Minneapolis	4d Energy Efficiency***	2018–2020	$250,000	$388,323	25	100	$3,883	65,702	25,081	657	251	27.3

Sources: Boulder 2019; C. Conant, energy services project manager, City of Fort Collins Utilities, pers. comm., April 23, 2021; I. Evans, public health specialist, City of Minneapolis, pers. comm., March 16, 2021; Minneapolis 2020a, 2020b.

Note: Average annual energy savings per rental unit are estimates, as we were unable to obtain data regarding the number of units receiving electric versus natural gas measures. Values reflect total savings divided by total participating units.

*Average annual program incentive costs and program spending per unit are only reflective of City of Boulder EnergySmart participants receiving rebates. The remaining program data are reflective of all City of Boulder participants in the EnergySmart program (those receiving rebates and quick installs). Savings data are deemed energy savings. The City of Boulder's spending on the EnergySmart program was leveraged with a DOE grant and Boulder County funding.

**Epic Homes participant counts reflect all program participants. Of the 1,057 homes receiving upgrades in 2019 and 2020, 163 were owner-occupied low- and moderate-income (LMI) households, 50 were rental homes, and 18 were LMI rental households. Some program participants received audits but did not receive efficiency upgrades.

***Green Cost Share 4d Energy Efficiency program spending, participant, and saving totals have been normalized across two years rather than three because 4d and Green Cost Share projects did not begin until the final quarter of 2018. Actual spending exceeds the program's total budget because the program draws on other funding allocated for the larger Green Cost Share program.

Table 8. Rental energy efficiency case study financing program loans

City	Rental efficiency initiatives	Data years	Avg annual total project costs	Avg annual city loan total	Avg annual properties served	Avg annual dwelling units served	Avg annual program loan per unit	Total avg annual project cost per unit
Fort Collins	Epic Homes Loans*	2018–2020	N/A	$444,406	32	32	$13,888	N/A
Milwaukee	Rental Rehabilitation Loan Program (HOME)	2015–2020	$167,000	$72,000	3	8	$9,000	$20,875
	Rental Rehabilitation Loan Program (city funded)	2015–2020	$460,00	$140,000	6	10	$14,000	$46,000

*Epic Homes data include financing issued both to homeowners and rental property owners.

Building and maintaining partnerships both within the government and with the local community to implement multiple rental energy efficiency initiatives

All four cities partnered with external stakeholders to implement their initiatives and used more than one policy or program to address rental housing energy efficiency. Across all city case studies, local governments' use of multiple policies and programs and reliance on external partnerships reflects the reality that the rental housing market is diverse, with many different property types and stakeholders with various needs. Boulder combined a policy requiring that rental properties achieve an energy performance requirement to maintain their rental license with a city–county program offering efficiency incentives and retrofit project technical assistance. Fort Collins paired an energy efficiency direct install and incentive program with an on-bill financing offer and energy labeling certificates. To implement these initiatives, the city partners with another local utility, external lenders, and a local university. Minneapolis helps landlords of affordable properties obtain a tax abatement and connects them with a separate program offering funding for efficiency retrofits that leverages available utility efficiency incentives and the services of a local energy efficiency nonprofit organization. Milwaukee offers two rental rehabilitation loan programs: one focused on targeted neighborhoods that is federally funded, and the other focused on buyers of tax foreclosed properties that is funded by the city. Neighborhood organizations and residents play a critical role in directing funding and promoting these offers.

The partnerships that both Minneapolis and Milwaukee have established help increase their programs' reach; they also serve an additional important purpose. In leveraging state and federal affordable housing programs that require affordability covenants, these cities have been able to ensure that participating properties remain affordable without having to create and enforce their own affordability covenants.

Across all city case studies, local governments' use of multiple policies and programs and reliance on external partnerships reflects the reality that the rental housing market is diverse, with many different property types and stakeholders with various needs.

Acquiring external funding from philanthropies and other local, state, or federal government sources while developing dedicated long-term funding

Three of the four cities included here also made at least some use of external funding to launch their initiatives. The City of Boulder leveraged Boulder County's award of a $12 million DOE grant and other Boulder County funds for the EnergySmart

program. Fort Collins used a $1 million grant from Bloomberg Philanthropies and a $200,000 grant from the Colorado Energy Office to reestablish the Epic Loans component of the Epic Homes program and to focus on serving rental properties. Milwaukee's original rental rehabilitation program has been mostly funded by the federal HOME program.

Three of these four case studies also have a dedicated and ongoing source of internal funding set aside for these and other energy and GHG emissions-reducing initiatives. Boulder has a CAP tax fund, Fort Collins collects energy efficiency fees on customer utility bills, and Minneapolis has agreed to reserve the use of its utility franchise fees to reduce GHG emissions. Local governments wishing to pursue similar initiatives may want to search for external funding to help develop a rental efficiency program while developing strategies to create dedicated funding sources to make such an initiative sustainable over many years. State and federal governments, along with philanthropic organizations, can provide seed funding to support the development of these policies and programs.

Local governments wishing to pursue similar initiatives may want to search for external funding to help develop a rental efficiency program while developing strategies to create dedicated funding sources to make such an initiative sustainable over many years.

Substantial program spending may be required to extend its reach and energy savings

While data from table 7 show Fort Collins reaching more properties annually through its Epic Homes program than the other case study cities, most of its 529 average annual participants are homeowners. Like Minneapolis, the Epic Homes program served an average of 25 rental homes per year in 2019 and 2020. Of these 25 rental homes, the program was able to serve an average of 9 LMI rental homes each year. The Epic Homes program is also different from those in the other two cities in that it focuses solely on single-family homes and provides only electricity upgrades. The program's lack of natural gas upgrades contributes significantly to the difference in MMBtu savings between this and the other programs.

The Boulder and Minneapolis program data in table 7 offer the clearest comparison of two cities' approaches to improving the energy efficiency of rental properties. Boulder's approach of combining energy efficiency requirements with an incentive and technical assistance program has been able to reach more rental homes, but Minneapolis has been able to achieve much higher per-unit energy savings. The Green Cost Share 4d Energy Efficiency program has been able to achieve per-unit MMBtu savings that are more than twice that of the EnergySmart program in Boulder. Furthermore, evidence indicates that the program may be able to achieve even higher per-unit savings in the future. Green Cost Share 4d Energy Efficiency properties were unable to receive no-cost direct install measures such as energy-efficient lighting upgrades in 2020 due to COVID-19 restrictions. Consequently, electricity savings were substantially lower. In 2019, the program achieved 104,306 kWh of savings in 20 properties with 74 units. This equates to 1,140 kWh of per-unit energy savings, which is nearly twice the average per-unit electricity savings of Boulder's EnergySmart program.

The Boulder and Minneapolis program data are consistent with prior research on utility low-income energy efficiency programs showing that energy efficiency program administrators face a trade-off between reaching more homes and achieving deeper energy savings for residents (Gilleo, Nowak, and Drehobl 2017; Samarripas and York 2019). Low-income households, many of which are renters, live in homes that are often in need of costly health, safety, and structural repairs in additional to substantial energy efficiency upgrades. These programs require higher spending than is typical of many energy efficiency improvement programs to achieve both high participation and savings. This pattern may be reflected in rental energy efficiency programs, but we are able to make a clear comparison between only two cities. Further research is needed.

Low-income households, many of which are renters, live in homes that are often in need of costly health, safety, and structural repairs in additional to substantial energy efficiency upgrades.

The data presented here represent only the programs' first two years, except for Boulder's EnergySmart data, which reflects eight years of program activity. Participation numbers for the Minneapolis and Fort Collins programs may increase with time; available data indicate that participation is trending upward. Even with the challenges created by the COVID-19 pandemic, Minneapolis's 4d Energy Efficiency program increased the number of participating rental units by 20% between 2019 and 2020, from 74 to 89 units. Consistent with its approach of taking an ongoing iterative approach to program development, Fort Collins Utilities made several changes to its Epic Homes program in 2021 that are designed to increase rental property participation. Program administrators doubled the maximum loan amount available for Epic Loans, altered the loan criteria to facilitate participation by rental property owners, and expanded the Epic Homes eligibility criteria beyond single-family homes to include stacked quadplexes. Consequently, the program reported serving 18 rental homes in just the first five months of 2021, equal to two-thirds of the total homes served in 2020, and 8 of the 18 homes were LMI households (C. Conant, energy services project manager, City of Fort Collins Utilities, pers. comm., June 3, 2021).

Programs specifically designed to reach low-income renters are more likely to do so

Of the four cities we profile, only Minneapolis is taking an approach that is wholly designed to preserve housing affordability for low-income renters while also lowering their energy burdens. While Boulder's efficiency standards have affected affordable rentals, and these properties received priority consideration for rebates and certain assistance through EnergySmart, the city did not track the policy's effect on these properties. Milwaukee's programs allow funds to be used for energy efficiency upgrades, but it does not track energy savings. Fort Collins has been tracking the number of LMI rental households served through its program. Compared to Fort Collins, Minneapolis has been able to reach nearly triple the number of properties and more than 10 times the number of rental units that are home to LMI renters. Minneapolis has served 25 of these properties (100 units per year) while Fort Collins has served 9 single-family homes per year.[39] These numbers are in line with findings from Ross, Jarrett, and York (2016) that energy efficiency programs will be able to reach more affordable properties when they are specifically designed to do so. The 4d programs are specifically designed to help preserve affordable housing and provide owners with efficiency improvement opportunities in the process. Conversely, the Epic Homes program is primarily designed to improve the efficiency of single-family homes, and program staff have taken actions to expand this appeal to single-family home rentals.

The 4d Affordable Housing Program's primary purpose is to preserve affordability, reduce energy use, and enhance healthy homes to support tenants and strengthen the bottom line for property owners.

Conducting continual community engagement while implementing initiatives provides multiples benefits

Boulder, Fort Collins, and Minneapolis have undertaken limited community engagement with low-income renters to inform the development and implementation of the initiatives featured here. The Boulder City Council public hearings on SmartRegs allowed for some public engagement, and some student renters did speak at these forums. Fort Collins Utilities conducted some community engagement with low-income renters at area food banks, and the program's CSU research partners will be conducting further community and stakeholder engagement as part of an effort to increase rental property participation. Milwaukee's consistent engagement with neighborhood groups demonstrates the value in continuing to conduct community engagement after a policy is adopted or a program launches. This engagement helps connect the city's staff to neighborhood landlords. As we have stressed, most affordable rental units are owned by individual landlords and are not typically professionally managed. Reaching these property owners may prove difficult, and it may be helpful to work with renters to identify and contact them. This engagement has also helped better direct multiple city services to address renter needs.

[39] While Minneapolis has served more-affordable properties, it is still serving only a small number per year.

Conclusion

Local governments have several opportunities to improve rental property efficiency while protecting tenants, preserving affordable communities and housing, and producing new affordable housing. When choosing an approach, each locality must carefully weigh the characteristics and needs of their local rental housing market. Individual communities may not be able to pursue all the policies and programs described here due to issues such as state pre-emption of local action and resource constraints, yet our research indicates that it may be necessary to use more than one initiative to improve rental efficiency and achieve equitable outcomes for renters and those that have been historically marginalized. Local government leaders should learn more about rental property occupants, owners, and neighborhoods to help guide these decisions. They can accomplish this by pairing local demographic and housing market data analysis with community engagement and more-inclusive stakeholder engagement. In adopting policies or programs, local leaders should ensure that their initiatives are specifically targeted to reach low-income rental units, as their occupants often experience high energy burdens. The launch and success of local rental efficiency initiatives will ultimately be determined based on local knowledge, resources, and effort.

This guide acts as only a starting place for local governments seeking to reduce rental property energy use. The rental housing market, our climate, and the energy sector may change substantially in the coming years. The USDN Rental Housing Energy Efficiency Learning Group that spurred the creation of this report will continue to convene, supporting members' collaboration with one another. Additional networking and research may be needed as localities face new challenges related to climate change and housing affordability.

References

3Ps Coalition. 2021. "3Ps Explainer." 3pshousingplan.org/explainer.

ACEEE. 2018. Commercial and Multifamily Building Energy Benchmarking, Transparency, and Labeling in US Cities. Washington, DC: ACEEE. www.aceee.org/sites/default/files/pdf/topic-benchmarking.pdf.

_____ . 2021. "State and Local Policy Database." database.aceee.org/.

Alliance for Housing Justice. 2020. "Housing Justice National Platform for a Homes Guarantee." www.allianceforhousingjustice.org/post/housing-justice-national-platform.

Ameresco. 2020. Project Highlight: Boston Housing Authority, MA. Framingham, MA: Ameresco. ameresco.com/wp-content/uploads/2020/04/boston-housing-authority-ma.pdf.

Andrews, C. 2020. Rental Building and Energy Efficiency Standards: Building Connections & Getting Started. Port Washington, WI: USDN Urban Sustainability Directors Network) Rental Housing Energy Efficiency Learning Group.

Arena, L., and G. Vijayakumar. 2012. Evaluation of Boulder, CO, SmartRegs Ordinance and Better Buildings Program. Prepared by NREL (National Renewable Energy Laboratory) and CARB (Consortium for Advanced Residential Buildings). Washington, DC: DOE (Department of Energy). nrel.gov/docs/fy12osti/54724.pdf.

Baechler, M., J. Williamson, T. Gilbride, P. Cole, M. Hefty, and P. Love. 2010. Guide to Determining Climate Regions by County. Prepared by Pacific Northwest National Laboratory and Oak Ridge National Laboratory. Washington, DC: DOE. eere.energy.gov/buildings/publications/pdfs/building_america/ba_climateguide_7_1.pdf.

Bartolomei, D. 2016. State Strategies to Increase Energy Efficiency in Low Income Housing Tax Credit Properties. Washington, DC: Energy Efficiency for All. energyefficiencyforall.org/resources/state-strategies-to-increase-energy-efficiency-in-low-income-housing-tax-credit-properties/.

Bastian, H. 2020. "Energy Efficiency in the Rental Housing Market—Addressing Policy Gaps for a Large Sector of Housing." Proceedings of the 2020 ACEEE Summer Study on Energy Efficiency in Buildings 1: 459–70. Washington, DC: ACEEE. aceee2020.conferencespot.org/event-data/pdf/catalyst_activity_10636/catalyst_activity_paper_20200812131022660_b0484c99_3a18_441d_9319_e1b436e5477c.

Bergstrom, D., K. Rose, J. Olinger, and K. Holley. 2012. The Community Engagement Guide for Sustainable Communities. Oakland, CA: PolicyLink. policylink.org/resources-tools/community-engagement-guide-for-sustainable-communities.

Bird, S., and D. Hernández. 2012. "Policy Options for the Split Incentive: Increasing Energy Efficiency for Low-Income Renters." Energy Policy 48: 506–14. ncbi.nlm.nih.gov/pmc/articles/PMC4819331/.

Boston (City of Boston). 2021. "Neighborhood Development Housing Policies." boston.gov/departments/neighborhood-development/neighborhood-development-housing-policies.

Boulder (City of Boulder). 2018. Information Item: Update on SmartRegs Compliance. Boulder, CO: City of Boulder. www-static.bouldercolorado.gov/docs/2018_09_27_IP-1-201809271700.pdf?_ga=2.60658157.1530837662.1613484130-692399192.1610646962.

_____ . 2019. SmartRegs Program-to-Date Progress Report. Boulder, CO: City of Boulder. www-static.bouldercolorado.gov/docs/SmartRegs_Dashboard___Q4_2018_-1-202006241422.pdf?_ga=2.27810684.1977099347.1611926821-692399192.1610646962.

_____ . 2020. 2019 Rental Housing License Long-Term Licenses and SmartRegs Compliance. Boulder, CO: City of Boulder. www-static.bouldercolorado.gov/docs/2019_RHL_Smart_Regs_Stats_for_web-1-202001230915.pdf?_ga=2.32708478.1977099347.1611926821-692399192.1610646962.

_____ . 2021. "Rental Housing Licenses." data-boulder.opendata.arcgis.com/datasets/92f70ea894ef47a582bb0d656aa4aa7d_0?geometry=-105.326%2C40.012%2C-105.218%2C40.035&selectedAttribute=ENERGYCOMPLIANT.

Burlington (City of Burlington). 2021a. An Ordinance in Relation to Chapter 18. Housing – Change re Energy Efficiency and Weatherization in Rental Housing. Burlington, VT: City of Burlington. go.boarddocs.com/vt/burlingtonvt/Board.nsf/files/C2RKKP51C01A/$file/BCO%20Chapter%2018.%20Housing%20Change%20re%20Energy%20Efficiency%20and%20Weatherization%20in%20Rental%20Housing_Revised%20-%20%20City%20Council%205.10.2021.pdf.

_____ . 2021b. "Article VII. Minimum Energy Efficiency Standards Ordinance." codepublishing.com/VT/Burlington/html/Burlington18/Burlington1807.html.

_____ . 2021c. "Statement from Mayor Miro Weinberger on Passage of Mandatory Rental Weatherization Ordinance." Press release, May 11. burlingtonvt.gov/Press/statement-from-mayor-miro-weinberger-on-passage-of-mandatory-rental-weatherization-ordinance.

Carpenter, S., and K. DeVoe. 2020. Epic Homes. Port Washington, WI: USDN Rental Housing Energy Efficiency Learning Group.

CEE (Center for Energy and Environment). 2021. "Mission & Values." www.mncee.org/mission-values.

Census Bureau. 2021a. "American Housing Survey (AHS)." census.gov/programs-surveys/ahs.html.

_____ . 2021b. "Explore Census Data." data.census.gov/cedsci/?q=households.

_____ . 2021c. "Measuring Household Experiences during the Coronavirus Pandemic: Household Pulse Survey—Phase 3.1" census.gov/data/experimental-data-products/household-pulse-survey.html.

Center for Community Change. 2016. Opening Doors to Homes for All: The 2016 Housing Trust Fund Survey Report. Washington, DC: Housing Trust Fund Project. housingtrustfundproject.org/wp-content/uploads/2016/10/HTF_Survey-Report-2016-final.pdf.

Center for Community Progress. 2021. "Tool 1: Rental Registration and Licensing." communityprogress.net/tool-1--rental-registration--licensing-pages-207.php.

Choi, J., and L. Goodman. 2020. "Mounting Pressures on Mom-and-Pop Landlords Could Spell Trouble for the Affordable Rental Market." Urban Wire, November 10. urban.org/urban-wire/mounting-pressures-mom-and-pop-landlords-could-spell-trouble-affordable-rental-market.

CJA (Climate Justice Alliance). 2021. "About." climatejusticealliance.org/about/.

Collinson, R. 2011. "Rental Housing Affordability Dynamics, 1990–2009." Cityscape 13 (2): 71–103. www.huduser.gov/portal/periodicals/cityscpe/vol13num2/ch4.html.

De La Campa, E. 2021. The Impact of COVID-19 on Small Landlords: Survey Evidence from Albany and Rochester, New York. Cambridge, MA: JCHS (Joint Center for Housing Studies of Harvard University). jchs.harvard.edu/research-areas/working-papers/impact-covid-19-small-landlords-survey-evidence-albany-and-rochester.

DOE (Department of Energy). 2019. "Low-Income Energy Affordability Data Tool." energy.gov/eere/slsc/maps/lead-tool.

Drehobl, A., L. Ross, and R. Ayala. 2020. How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the U.S. Washington, DC: ACEEE. aceee.org/research-report/u2006.

EDF (Environmental Defense Fund). 2018. Low-Income Energy Efficiency: A Pathway to Clean, Affordable Energy for All. Prepared by APPRISE (Applied Public Policy Research Institute for Study and Evaluation). New York: EDF. edf.org/sites/default/files/documents/liee_national_summary.pdf.

EEAC (Massachusetts Energy Efficiency Advisory Council). 2018. 2019–2021 Energy Efficiency Plan Term Sheet. Massachusetts: EEAC. ma-eeac.org/wp-content/uploads/Term-Sheet-10-19-18-Final.pdf.

EIA (Energy Information Administration). 2018. "2015 RECS Survey Data." eia.gov/consumption/residential/data/2015/.

Elevate Energy. 2021. Data Driven Program Design. Port Washington, WI: USDN Rental Housing Energy Efficiency Learning Group.

Elia, E. 2019. "Perpetual Affordability Covenants: Can These Land Use Tools Solve the Affordable Housing Crisis?" Penn State Law Review 124: 57–106. digitalrepository.unm.edu/cgi/viewcontent.cgi?article=1779&context=law_facultyscholarship.

Fodor, E. 2010. Relationship between Growth and Prosperity in 100 Largest U.S. Metropolitan Areas. Eugene, OR: Fodor & Associates. fodorandassociates.com/Reports/Growth_&_Prosperity_in_US_MSAs.pdf.

Fort Collins (City of Fort Collins). 2021. "Epic Homes." fcgov.com/utilities/epichomes/.

Frank, M., and S. Nowak. 2016. "Who's Participating and Who's Not? The Unintended Consequences of Untargeted Programs." Proceedings of the 2016 ACEEE Summer Study on Energy Efficiency in Buildings 2: 1–13. Washington, DC: ACEEE. aceee.org/files/proceedings/2016/data/papers/2_542.pdf.

Frost, R. 2020. "New Strains on Home Utilities During the Pandemic." Housing Perspectives, July 23. jchs.harvard.edu/blog/new-strains-on-home-utilities-during-the-pandemic.

Gilleo, A., S. Nowak, and A. Drehobl. 2017. Making a Difference: Strategies for Successful Low-Income Energy Efficiency Programs. Washington, DC: ACEEE. aceee.org/research-report/u1713.

Goldstein, B., D. Gounaridis, and J. Newell. 2020. "The Carbon Footprint of Household Energy Use in the United States." Proceedings of the National Academy of Sciences of the United States of America 117 (32): 19122–30. pnas.org/content/117/32/19122.

González, R. 2020. The Spectrum of Community Engagement to Ownership. Oakland, CA: Facilitating Power. www.facilitatingpower.com/spectrum_of_community_engagement_to_ownership.

Hickey, R., L. Sturtevant, and E. Thaden. 2014. Achieving Lasting Affordability through Inclusionary Housing. Cambridge, MA: Lincoln Institute of Land Policy. ihiusa.org/wp-content/uploads/Achieving-Lasting-Affordability-through-Inclusionary-Housing.pdf.

HUD (Department of Housing and Urban Development). 2021a. "CDBG Entitlement Program Eligibility Requirements." www.hudexchange.info/programs/cdbg-entitlement/cdbg-entitlement-program-eligibility-requirements/.

_____ . 2021b. "HOME Investment Partnership Program." www.hud.gov/program_offices/comm_planning/home.

Iyer, S. 2021. Celebrating 20 Years of Measuring Baltimore's Progress Towards a Better Quality of Life. Port Washington, WI: USDN Rental Housing Energy Efficiency Learning Group.

JCHS (Joint Center for Housing Studies of Harvard University). 2011. America's Rental Housing: Meeting Challenges, Building on Opportunities. Cambridge, MA: JCHS. jchs.harvard.edu/research-areas/reports/americas-rental-housing-meeting-challenges-building-opportunities.

_____ . 2020. America's Rental Housing 2020. Cambridge, MA: JCHS. jchs.harvard.edu/americas-rental-housing-2020.

_____ . 2021a. "Rental Housing." jchs.harvard.edu/research-areas/rental-housing.

_____ . 2021b. The State of the Nation's Housing 2021. Cambridge, MA: JCHS. jchs.harvard.edu/state-nations-housing-2021.

La Jeunesse, E. 2016. "Energy Consumption in the Residential Rental Sector, and Promoting Energy Efficiency." Housing Perspectives, January 19. jchs.harvard.edu/blog/energy-consumption-in-the-residential-rental-sector-and-promoting-energy-efficiency.

Lee, H. 2017. "Who Owns Rental Properties, and Is It Changing?" Housing Perspectives, August 18. jchs.harvard.edu/blog/who-owns-rental-properties-and-is-it-changing.

Mary Robinson Foundation. 2020. "Principles of Climate Justice." mrfcj.org/principles-of-climate-justice/.

Mast, E. 2019. "The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market." Upjohn Institute Working Paper 19-307. doi.org/10.17848/wp19-307.

McCoy, M. 2021. "Minneapolis Health Department Splits the Bill with Green Investors." Local Energy Rules episode 121, January 13. ilsr.org/minneapolis-green-cost-share-ler-121/.

Milwaukee (City of Milwaukee). 2017. Rental Rehabilitation Program Expansion. Milwaukee: City of Milwaukee Department of City Development. city.milwaukee.gov/ImageLibrary/Groups/cityDCD/housing/nidc/Applications/RRExpansion20171.pdf.

_____ . 2020. "NIDC Targeted Investment Neighborhoods (TINs)." city.milwaukee.gov/DCD/NIDC/TINs.

Minneapolis (City of Minneapolis). 2018a. "Green and Affordable 4d Pilot Initiative (RCA-2018-00401)." lims.minneapolismn.gov/RCA/2301.

_____ . 2018b. Minneapolis 4d Affordable Housing Incentive Program Public Comments. Minneapolis: City of Minneapolis. lims.minneapolismn.gov/Download/RCA/6635/Minneapolis%204d%20Affordable%20Housing%20Incentive%20Program%20Public%20Comments.pdf.

_____ . 2019. City of Minneapolis 2019 Budget. Minneapolis: City of Minneapolis. www2.minneapolismn.gov/media/content-assets/www2-documents/government/2019-adopted-budget.pdf.

_____ . 2020a. 4d program 2018–2020 Results. Minneapolis: City of Minneapolis. minneapolismn.gov/Download/RCA/14648/4d%20Affordable%20Housing%20Program%202018-20%20Results%20Report.pdf.

_____ . 2020b. City of Minneapolis 2020 Budget. Minneapolis: City of Minneapolis. www2.minneapolismn.gov/budget/2020-budget.

_____ . 2021a. "City of Minneapolis 4d Affordable Housing Incentive Program." www2.minneapolismn.gov/government/programs-initiatives/homes-development-assistance/4d-affordable-housing/#:~:text=The%20Minneapolis%204d%20program%3A,efficiency%20improvements%20and%20solar%20installations.

_____ . 2021b. "Green Zones Initiative." www2.minneapolismn.gov/government/departments/coordinator/sustainability/policies/green-zones-initiative/.

Nedwick, T., and L. Ross. 2020. "Mandating Building Efficiency while Preserving Affordable Housing: Opportunities and Challenges." Proceedings of the 2020 ACEEE Summer Study on Energy Efficiency in Buildings 13: 215–31. Washington, DC: ACEEE. aceee2020.conferencespot.org/event-data/pdf/catalyst__activity__10997/catalyst__activity__paper__20200812133235576__437b9bd6__1824__4c79__8c8b__c8be751171c4.

Neiger, D., S. Johnson, L. Hutchings, D. Johnston, and D. Damron. 2010. City of Boulder SmartRegs Case Study Final Report. Prepared by Populus Sustainable Design Consulting and What's Working, Inc. Boulder: City of Boulder. www-static.bouldercolorado.gov/docs/smartregs-final-report-to-the-city-1-201305241422.pdf?_ga=2.263935692.1977099347.1611926821-692399192.16106469 62.

NLIHC (National Low Income Housing Coalition). 2020. Out of Reach: The High Cost of Housing. Washington, DC: NLIHC. reports.nlihc.org/sites/default/files/oor/OOR__2020.pdf.

NYU Furman Center and Abt Associates. 2021. "Local Housing Solutions." www.localhousingsolutions.org/.

Park, A. 2014. Equity in Sustainability: An Equity Scan of Local Government Sustainability Programs. Chicago: USDN (Urban Sustainability Directors Network). usdn.org/uploads/cms/documents/usdn__equity__scan__sept__2014__final.pdf.

Petersen, A., and R. Lalit. 2018. Better Rentals, Better City: Smart Policies to Improve Your City's Rental Housing Energy Performance. Boulder: Rocky Mountain Institute. rmi.org/wp-content/uploads/2018/05/Better-Rentals-Better-City_Final3.pdf.

Providence (City of Providence). 2019. The City of Providence's Climate Justice Plan: Creating an Equitable, Low-Carbon, and Climate Resilient Future. Providence, RI: City of Providence. providenceri.gov/sustainability/climate-justice-action-plan-providence/.

Race Forward. 2019. Equity Assessment Tool: Zero Cities Project. New York, NY: Race Forward. usdn.org/uploads/cms/documents/equity_assessment_tool_-zero_cities_project_-_race_forward_2019.pdf.

Reames, T., M. Reiner, and M. Stacey. 2018. "An Incandescent Truth: Disparities in Energy-Efficient Lighting Availability and Prices in an Urban U.S. County." Applied Energy 218: 95-103. www.sciencedirect.com/science/article/abs/pii/S0306261918302769.

Reames, T., B. Stacey, and M. Zimmerman. 2019. A Multi-State Analysis of Equity in Utility-Sponsored Energy Efficiency Investments for Residential Electric Customers. Ann Arbor: University of Michigan. www.researchgate.net/publication/335600764_A_MULTI-STATE_ANALYSIS_OF_EQUITY_IN_UTILITY-_SPONSORED_ENERGY_EFFICIENCY_INVESTMENTS_FOR_RESIDENTIAL_ELECTRIC_CUSTOMERS.

Reina, V., and S. Goldstein. 2021. Ongoing Challenges for Rental Business Owners in the City of Los Angeles during the COVID-19 Pandemic. Philadelphia: The Housing Initiative at Penn. housinginitiative.org/uploads/1/3/2/9/132946414/hip_la_owner_brief_final.pdf.

Ribeiro, D., S. Samarripas, K. Tanabe, A. Jarrah, H. Bastian, A. Drehobl, S. Vaidyanathan, E. Cooper, B. Jennings, and N. Henner. 2020. The *2020 City Clean Energy Scorecard*. Washington, DC: ACEEE. aceee.org/research-report/u2008.

Rosenthal, S. 2014. "Are Private Markets and Filtering a Viable Source of Low-Income Housing? Estimates from a 'Repeat Income' Model." American Economic Review 104 (2): 687–706. aeaweb.org/articles?id=10.1257/aer.104.2.687.

Ross, L., and S. Samarripas. 2020. "An Emerging Model for Assessing Cities' Equity-Driven Clean Energy Strategies." Proceedings of the 2020 ACEEE Summer Study on Energy Efficiency in Buildings 7: 299–315. Washington, DC: ACEEE. aceee2020.conferencespot.org/event-data/pdf/catalyst_activity_10812/catalyst_activity_paper_20200812132410602_0b2623eb_c6f5_4522_acc5_8bbad4536b63.

Ross, L., M. Jarrett, and D. York. 2016. Reaching More Residents: Opportunities for Increasing Participation in Multifamily Energy Efficiency Programs. Washington, DC: ACEEE. aceee.org/research-report/u1603.

Ross Strategic. 2017. Better Buildings Residential Network Case Study: Fort Collins, Colorado. Washington, DC: DOE. www.energy.gov/sites/default/files/2017/07/f35/bbrn_case-study_cbsm-fort-collins_62917_v2.pdf.

Samarripas, S. 2020. Fostering Equity in Local Clean Energy Policy: Lessons from the *2019 City Clean Energy Scorecard*. Washington, DC: ACEEE. aceee.org/fact-sheet/2020/06/fostering-equity-local-clean-energy-policy-lessons-2019-city-clean-energy.

Samarripas, S., and K. Tanabe. 2020. Understanding Multifamily Home Energy Efficiency Potential. Washington, DC: ACEEE. aceee.org/topic-brief/2020/10/understanding-multifamily-home-energy-efficiency-potential.

Samarripas, S., and D. York. 2018. Our Powers Combined: Energy Efficiency and Solar in Affordable Multifamily Buildings. Washington, DC: ACEEE. aceee.org/research-report/u1804.

_____ . 2019. Closing the Gap in Energy Efficiency Programs for Affordable Multifamily Housing. Washington, DC: ACEEE. aceee.org/research-report/u1903.

_____ . 2021. Leading by Example: Multifamily Real Estate Companies Approach Energy Management and Savings. Washington, DC: ACEEE. aceee.org/topic-brief/2021/02/leading-example-how-multifamily-real-estate-companies-approach-energy.

San Francisco (City of San Francisco). 2009. What You Should Know About the Residential Energy Conservation Ordinance. San Francisco: City of San Francisco Department of Building Inspection. sfdbi.org/ftp/uploadedfiles/dbi/Key__Information/ResidentialEnergyConservationOrdinance.pdf.

Saporito, J. 2019. Feasibility Study: Implementation of a Rental Licensing Program with Minimum Efficiency Standards for Residential Rental Properties in Denver. Denver: Denver Public Health & Environment. denvergov.org/content/dam/denvergov/Portals/695/2019/h%26h-2019/Rentals%20with%20Efficiency%20Standards%20Report.pdf.

Stratford, B. 2020. "The Threat of Rent Extraction in a Resource-Constrained Future." Ecological Economics 169: 106524. sciencedirect.com/science/article/pii/S0921800919304203?via%3Dihub.

Upright Consulting Services. 2020. Rental Stakeholder Engagement Overview. Port Washington, WI: USDN Rental Housing Energy Efficiency Learning Group.

Vasatka, E. 2020. SmartRegs: City of Boulder's Rental Housing Energy Efficiency Policy. Port Washington, WI: USDN Rental Housing Energy Efficiency Learning Group.

Zuk, M., and K. Chapple. 2016. Housing Production, Filtering and Displacement: Untangling the Relationships. Berkeley: Institute of Governmental Studies, University of California, Berkeley. urbandisplacement.org/sites/default/files/images/udp_research_brief_052316.pdf.

Appendix A.

Urban Sustainability Directors Network (USDN) Equity Principles and Commitments

USDN recognizes the following:

- *The root causes of climate change, environmental injustice, and racial inequity are the same.* Climate change, environmental injustice, and racial inequity are systemic outcomes of colonization: the exploitative extraction of natural and human resources to generate profit for the few. Solutions that do not directly address these common causes will not succeed.
- *Successful solutions prioritize the most marginalized.* We believe that to design better solutions, we must practice targeted universalism, prioritizing those who experience the most vulnerability to climate change, disproportionate exposure to environmental injustice, and the biggest barriers to benefiting from climate solutions. By doing so, we will produce solutions that meet the needs of everyone. By not doing so, we are upholding current disparities.
- *Prioritizing marginalized communities means leading with race.* Race is the leading predictor of outcomes across the United States and Canada, yet governments have not systemically acknowledged or addressed disparities by race or their role in creating them. Because of this, racial analysis must be a priority. "Leading with race" does not mean "only race." It is a practice of starting with a racial equity analysis to understand how race impacts outcomes, recognizing how the intersectionality of identities and groups also impacts outcomes.
- *Equity is a professional competency.* The skills associated with advancing equity make us better public servants, preparing us to deal with the complex nature of the social, economic, and environmental challenges our communities face.
- *Equity is responsible governance.* The government has a fiscal and moral responsibility to address the long-term implications that inequity has on prosperity, health, and safety for residents and stakeholders. Governments can either create or eliminate barriers for better outcomes through their policies, programs, and relationships.
- *Diversity is an asset.* Increasing diversity within the sustainability field, and particularly in decision making positions within government, will increase the long-term relevance and accountability of our work to communities who have been systematically denied influence. Diverse perspectives produce more sophisticated solutions. To diversify successfully, the sustainability field must consciously build an inclusive culture.

USDN commits to the following:

- *Creating a learning community.* Developing equitable solutions that will produce the change needed in our communities will be hard, complicated work. USDN is a space for us to be authentic and make mistakes, but it will also push us to do better and be better.
- *Supporting our members' individual racial equity work.* To build our professional competency and confidence in racial equity work, we must honor the vulnerability, courage, and humanity required. Although systemic racism negatively impacts us all, Black, Indigenous, and People of Color bodies and white bodies will have different needs, from healing to humility. We will support each member's individual anti-racism practice.
- *Building the pipeline of diverse sustainability professionals and developing leaders.* We are committed to using our positional power and influence to attract, train, and retain members from communities underrepresented in the sustainability field, particularly Black, Indigenous, and People of Color practitioners. We also commit to creating growth and leadership opportunities for these individuals.
- *Structuring USDN funding and resources to support our equity principles.* USDN will use our equity principles to inform staffing, programming, and budget decisions for both our organization and the funds we make available to members.
- *Accelerating adoption of equity values and commitments in our field of practice.* USDN will work with partners that share our values, and we will use our organizational influence to set an example of racial equity work for our community of practice.
- *Creating an inclusive culture.* USDN will create spaces where members, staff, and partners feel welcome to participate fully with their identities, experiences, and positions.
- *Being accountable to our principles.* USDN will evaluate and publicly report on how we are living up to our explicitly stated equity principles and our opportunities to do better.

Appendix B.

USDN Rental Housing Energy Efficiency Learning Group Outline

Table B1. Rental Housing Energy Efficiency Learning Group: Meeting information, July 2020–May 2021

Month	Topics	Objectives	Speakers
July 2020	Introduction to the Learning Group, the rental housing market, and local governments' role in promoting rental energy efficiency	• Get to know group cochairs, facilitators, and fellow participants • Review and shape the learning group's plan for moving forward • Understand how rental housing and its occupants have changed since the Great Recession • Share and learn about local government goals affecting rental energy efficiency	• USDN • ACEEE
August 2020	Equity-driven community engagement	• Discuss the purpose and value of equity-driven community engagement • Identify important housing stakeholders and explore ways to build relationships with them to better understand their interests and needs • Discuss processes for including these stakeholders in the creation, implementation, and evaluation of initiatives	• Kapwa Consulting • City of Portland, Oregon • Fort Collins Utilities
September 2020	Trends in local equity-driven rental energy efficiency policies and programs	• Orient our rental efficiency policy discussion alongside a climate equity framework • Learn about ways that cities are aligning their equitable rental efficiency strategies with local housing policy • Discuss opportunities and challenges associated with pursuing the highlighted policies and programs	• ACEEE
October 2020	Overview of local rental energy efficiency standards and labeling policies	• Review characteristics of rental energy efficiency standards, labeling/disclosure policies, and building performance approaches to energy efficiency standards • Examine available data assessing the energy savings potential of policy options and how options vary by building type (single-family, small/medium/large multifamily) • Discuss potential impacts on property owners, managers, and residents	• Rocky Mountain Institute • Earth Advantage • City of Boulder
November 2020	Design and implementation of local rental energy efficiency standards	• Examine key factors that local governments should consider before implementing a rental property energy efficiency requirement • Learn about some of the first steps a local government can take to develop and implement a new rental efficiency policy • Explore opportunities and challenges local governments may face in pursuing these initiatives	• City of Somerville, Massachusetts

Month	Topics	Objectives	Speakers
December 2020	Accounting for the housing affordability and displacement challenges associated with energy efficiency initiatives	• Formally introduce concepts of displacement, gentrification, and tenant protections • Introduce potential tools and solutions that local governments can use to influence these actions • Discuss and deepen understanding of current challenges that group members face related to affordability and anti-displacement	• Kapwa Consulting • Massachusetts Climate Action Network
January 2021	Overview of local rental efficiency incentive program participation challenges and opportunities	• Discuss strategies to increase landlord and renter participation in existing energy efficiency programs and voluntary initiatives • Consider how program design and communications decisions impact people and neighborhoods differently • Explore indicators and metrics that can help guide local governments in expanding the reach of these programs and improve outcomes for participants • Continue last month's discussion on unintended consequences	• Baltimore Neighborhood Indicators Alliance • Vermont Energy Investment Corporation
February 2021	Strategies to improve participation in local rental efficiency incentive programs	• Discuss strategies to increase landlord and renter participation in existing energy efficiency programs and voluntary initiatives • Consider, through examples, how to apply indicators and data to program design and strategies • Begin conversations about how to investigate and implement voluntary programs	• Elevate Energy • City of Atlanta
March 2021	Overview of rental housing efficiency financing	• Characterize the current landscape and needs for financing that can be used to improve the energy efficiency of multifamily rental properties • Discuss how local governments can play an important role in financing retrofit projects moving forward • Share your thoughts about the role your local government can play in rental efficiency financing	• Fannie Mae • Inclusive Prosperity Capital
April 2021	Local role in rental energy efficiency financing	• Explore the specific opportunities and limitations local governments may face in supporting rental property access to energy efficiency financing • Understand the importance of working with both government and nongovernment stakeholders to build and implement financing offers • Discuss what's important to consider for developing and delivering more equitable and inclusive efficiency financing offers for rental properties	• City of Milwaukee • City of Minneapolis
May 2021	Learning Group peer-to-peer discussions	• Explore approaches and progress on rental housing energy efficiency at state and local levels • Highlight and provide feedback on group member work on rental housing policies and programs during 2020–2021 • Reflect on learning group progress • Provide updates on next steps for the report and the group	• City of Cincinnati • City of Hartford

Appendix C.

Internal Local Government Working Group Tips

The following list of recommended actions was assembled by Christine Andrews, who works for the City of Somerville, Massachusetts (Andrews 2020). This guidance is based on the city's experience in facilitating an internal working group of local government department staff. The working group was assembled to discuss options for reducing rental housing energy use. Recommended actions are organized based on when they should occur relative to a scheduled meeting.

BEFORE MEETINGS

- Open lines of communication in advance
- Send a brief meeting overview with invitations
- Set a schedule, with a specific number of meetings, that works for participants

DURING MEETINGS

- Explain the meeting's purpose
- Use one-third of the available time to provide an overview of the meeting topic, then use the remaining time for discussion
- Listen, listen, listen

AFTER MEETINGS

- Categorize and share meeting notes with participants
- Do not give homework
- Follow up with participants